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DEPARTMENT OF AGRICULTURAL ECONOMICS, EDUCATION AND EXTENSION

DEVELOPING A MARKETING STRATEGY FOR SMALLHOLDER CABBAGE FARMERS: A CASE FOR SHAMVA, GOROMONZI DISTRICT IN ZIMBABWE

By

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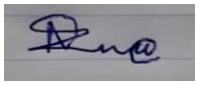
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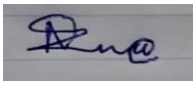
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DECLARATION

I, Donald Nzorozwa, declare that this dissertation entitled, “Developing a marketing strategy for smallholder cabbage farmers a case for Shamva, Goromonzi District in Zimbabwe” submitted to Bindura University of Science Education, Department of Agricultural Economics, Education and Extension is a record of an original work done by me under the guidance and supervision of Dr Mafuse and other academic staff. This work is submitted in partial fulfilment of the requirements for the award of Bachelor of Agricultural Science Honours Degree in Agricultural Economics and Management. The results embodied in this thesis have not been submitted to any University or Institute for the award of any degree of diploma.

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DEDICATION

This dissertation is dedicated to my parents Mr and Mrs Nzorozwa.

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I would like to extend my sincere appreciation to my supervisor, Dr Mafuse, for the invaluable guidance, patience and support that she has given me during the course of this research work. The vast knowledge in agricultural economics and marketing by the supervisor helped a great deal in producing this thesis. I appreciate very much the willingness of the cabbage farmers of the Shamva district who kindly participated in this study.

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ABSTRACT

Cabbage production by small-scale farmers in Shamva District of Zimbabwe provides important opportunities but is hindered by poor marketing arrangements and lack of infrastructure and market linkages. This research project sought to establish a strategic approach to marketing by small-scale cabbage growers in the area. The specific objectives included: (i) to identify strategies to ensure volume stability and improve negotiating abilities; (ii) to recommend inexpensive ways of handling and storing harvested crops to avoid losses; and (iii) to identify the difficulties associated with marketing activities. A quantitative research design was adopted involving structured questionnaires from 120 respondents. Data analysis methods included descriptive statistics, frequency distribution, cross tabulation and chi-square test. The results indicated that smallholders marketed their produce individually and through informal marketers with poor negotiating ability and poor farm-gate prices. The rate of post-harvest losses was high, lying in the range of 25-40%. The major problems related to marketing were related to the lack of proper storage facilities and transportation. In addition, the farmers faced issues relating to unstable prices and lack of market information. They also had a problem with bad road infrastructure and poor access to markets. As a result of the above mentioned problems, it is recommended that farmer cooperatives be formed along with collection centers for storage using evaporative coolers. There should also be development of market information systems through mobile phones.

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ACRONYMS AND ABBRIVATIONS

AMS	Agricultural Market Systems
AGRITEX	Agricultural Technical and Extension Services
SPSS	Statistical Package for the Social Science
GDP	Gross Domestic Product
FAO	Food and Agriculture Organization
NGOs	Non-Governmental Organizations
SWOT	Strength, Weakness, Opportunities and Threats
ZECC	Zero Energy Cool Chamber

CHAPTER 1

INTRODUCTION

1.1 Background of the study

To this end, agriculture continues to be one of the leading factors that shape the lives of rural communities in Zimbabwe. As reported by ZIMSTAT (2022), more than 60 percent of the people in Zimbabwe are reliant on agriculture and horticulture has become one of the major strategies through which smallholder farmers can diversify their incomes in Shamva. Amongst the various agricultural practices, horticultural farming has become one of the key agricultural activities as it can produce high returns within a short period of time and is suitable for smallholder farmers (World Bank, 2020). Cabbage is one of the commonest vegetables grown in peri-urban areas such as Shamva because it is fast producing, requires low capital investment to grow and there is high demand for cabbages in the urban market.

The country's agriculture is a significant contributor to its economy, making up about 12-14% of the Gross Domestic Product, and most Zimbabweans practice farming as small-scale farmers cultivating land smaller than five hectares (Ministry of Lands, Agriculture, Water and Rural Resettlement, 2021). In the words of Maseko et al. (2026), the horticulture sub-sector including vegetable production is crucial to the provision of food security, nutrition, and incomes in the country. The cabbage plant has been found to have become significant among the small-scale farmers of the Mashonaland East Province because it has an easy cultivation process with a life span of about 70-90 days, adapts to different soil types and has a constant demand in both urban and peri-urban areas (Mhlanga et al., 2022). The Zimbabwe National Statistics Agency reported in 2025 that there were 376 tons of cabbage grown by 746 government-sponsored business organizations between January and August 2024/2025, and the farmers of Mashonaland East had earned $65 863 from horticultural sales in that period.

However, despite all the above-mentioned benefits, smallholder farmers who cultivate cabbages still record very low and highly unpredictable profits. According to the Consumer Council of Zimbabwe (2024), cabbage prices have been causing market volatility with an increase of 97.7

percent recorded within January 2024 owing to currency devaluation and seasonal demand peaks. In terms of income instability for the producers, Mashonaland East farmers have only made very low margins of income per unit of produce (Zimbabwe National Statistics Agency, (2025). This problem is mainly because of the challenges associated with the marketing conditions in that the major constraints faced by smallholder farmers who grow cabbages are price instability arising from fluctuations in demand and supply during certain periods, bad infrastructure (especially storage facilities and road transport system) and lack of marketing information (Kampungu et al., 2024). Smallholder farmers sell the products at low prices and lose about 25-40% of the harvest after harvesting as a result of poor shelf life of fresh produce.

This problem is common in Zimbabwean horticulture sector analyses, whereby despite the high production capability of small-scale farmers, their marketing system still lags behind and is highly fragmented (Mhlanga et al., 2022). Fragmentation has numerous negative impacts on income levels of farmers. The Agricultural Marketing Authority (2026) states that as individuals, small-scale farmers lack bargaining power, forcing them to make sales at very low rates during gluts in supplies. Fragmentation makes value chains more costly, as well as relying on informal middlemen who earn excess profits. Informal middlemen still dominate sales, whereby majority of the farmers still sell as individuals with farm gate prices being made by these middlemen who reap maximum profits (Asad et al., 2024). Furthermore, it has been noted from African horticulture value chain analysis that improvement in incomes only takes place where there is an enhanced market linkage, storage facilities, and market information systems (FAO, 2021; World Bank, 2020). Also, the theory of the Agricultural Market system shows that small-scale farmers will benefit economically where their market information system, infrastructure, finances, and market linkage are effectively done (Singh and Dey, 2023; Marion et al., 2024).

In this case, the study is intended to come up with a marketing strategy that will apply well in the study location by utilizing available information and theoretical framework such as the Agricultural Market System (USAID, 2023). Moreover, in analyzing the prevailing condition and conducting intervention such as establishment of farmer led collecting centers and forming focus groups, the study is going to look for profit-making opportunities. This will be done by meeting the role of policy reform as the National Agriculture Policy Framework the vision 2030 in Zimbabwe (Ministry of Land, 2021).

1.2 Problem Statement

Smallholder cabbage farmers in Shamva District face persistent challenges in achieving profitable and sustainable participation in agricultural markets, despite the crop's high production potential and strong demand within Zimbabwe's horticultural value chain. The central constraint is not production capacity, but rather the absence of structured and coordinated marketing systems that would enable farmers to collectively access markets, negotiate fair prices and reduce dependency on informal middlemen.

Existing evidence indicates that smallholder farmers who market produce individually tend to receive significantly lower prices compared to those engaged in collective marketing arrangements. Studies in Zimbabwe show that collective marketing can generate price premiums of approximately 19–23%, largely due to improved bargaining power and reduced transaction inefficiencies (Chikazhe et al., 2023). However, in Shamva District, such coordinated marketing structures remain weak or underdeveloped, resulting in fragmented supply, weak negotiation capacity and continued exposure to exploitative pricing structures.

In addition, post-harvest losses within the vegetable value chain remain substantial, estimated at 25–40% of harvested cabbage, largely due to inadequate cold chain infrastructure, poor handling practices and weak transport systems (FAO, 2022; Nyamandi et al., 2022). These losses significantly reduce marketable volumes and further erode farmer's income. The situation is compounded by limited access to timely and reliable market information, particularly regarding prices and demand trends. As a result, farmers often engage in distress selling during periods of oversupply, while simultaneously experiencing unmet demand in other market segments (ZimTrade Horticulture Review, 2023).

Furthermore, structural constraints such as limited access to finance, lack of standardized grading systems and weak linkages to formal markets such as supermarkets and institutional buyers restrict the ability of farmers to upgrade their market participation. These challenges collectively reinforce income instability and reduce the capacity of farmers to reinvest in production and productivity-enhancing technologies.

Despite various agricultural support interventions in Zimbabwe, limited attention has been given to the design and implementation of integrated marketing strategies that combine collective

action, post-harvest management and market intelligence systems for smallholder cabbage farmers. Consequently, farmers remain trapped in a low-income equilibrium characterized by high production effort but low returns. It is against this background that this study seeks to examine the marketing challenges faced by smallholder cabbage farmers in Shamva District and to develop an appropriate marketing strategy framework that enhances collective action, reduces post-harvest losses, and improves access to profitable markets.

1.3 Research Questions

This study is guided by the following research questions:

1. What are the key marketing challenges faced by smallholder cabbage farmers in Shamva District?
2. What collective action and farmer group mechanisms exist or can be developed to improve volume consistency and bargaining power for smallholder farmers?
3. What low cost post-harvest handling and storage interventions can be implemented to reduce post-harvest losses?
4. What marketing strategy framework is most appropriate for improving the commercial performance of smallholder cabbage farmers in the study area?

1.4 Objectives of the Study

1.4.1 Main Objective

The main objective of this study is to develop a comprehensive, farmer centred marketing strategy for smallholder cabbage farmers in Shamva District, Zimbabwe, that improves income stability, reduces post-harvest losses and enhance market access.

1.4.2 Specific Objectives

1. To determine the market challenges faced by smallholder cabbage farmers in Shamva.

2. To assess existing and potential market linkage mechanisms that can improve volume consistency and bargaining power among smallholder cabbage farmers.

3. To identify and assess low-cost post-harvest handling and storage interventions that reduce losses for the smallholder cabbage farmers.

1.5 Significance of the Study

There are many important implications that come along with the conclusions drawn from the current study in relation to academic contribution, policy implications and practical relevance to rural farmers. In terms of the academia, the current paper provides an addition to the literature on marketing strategies among subsistence farmers in sub-Saharan Africa through provision of evidence on the situation in Zimbabwe. There is evidence presented here on the application of the Agricultural Market Systems theory among vegetable growing smallholders.

In terms of the policies, there are important implications that arise from the study and recommendations which are directly relevant to the national agriculture policy framework and the country's vision 2030 plan to provide farmers with equitable access to markets, improve value chains and increase rural incomes. The research provides important information to the Ministry of Lands, Agriculture, Water and Rural Resettlement, AGRITEX extension workers, NGO's and development organizations operating in Mashonaland East Province.

Practically, this marketing strategy gives direct recommendations for how farmer groups, cooperatives, and agribusiness investors can enhance the marketing efficiency of small-scale cabbage production. Programmers working as agricultural development extensionists will appreciate how easily the findings of this document can be applied in the design of agricultural extension programs.

The benefits that would accrue to particular stakeholders as a result of conducting this study are as follows:

Small-scale cabbage farmers: Access to a proven four pillar marketing strategy which is expected to help them achieve increased prices (by 19-23%), decreased post-harvest losses (to below 15%), and improved income security through collective bargaining.

AGRITEX extension officers: A low-cost and proven intervention package (Zero Energy Cool Chamber, grading protocol and mobile market information systems) which can be incorporated into the normal extension training program.

Policymakers: Evidence-based research which can be used to guide policy decisions towards achieving the objectives of the National Agricultural Policy Framework and Vision 2030, especially on the institutional procurement of produce.

Traders: An insight into the ability to increase volumes, enhance quality and improve reliability through farmers' cooperatives.

Development partners: A proven, situation-specific approach that is quantifiable through specific indicators (rise in price, reduction in losses and diversification of marketing channels) for smallholder horticulture market interventions within Mashonaland East Province and agro-ecologically comparable zones.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter offers a critical analysis of relevant literature regarding the formulation of marketing strategies among smallholder vegetable farmers, especially those growing cabbage. The review begins by examining the theoretical perspective on the subject matter and proceeds through to the empirical work conducted within the field of developing countries as well as the case of Zimbabwe. The review examines aspects ranging from market system perspective, marketing strategy formulation, reduction of post-harvest losses, collective action and linkages, as well as information systems in marketing. This chapter ends with the identification of the research gap as well as the conceptual framework underlying the research.

2.2 THEORATICAL FRAMEWORKS

2.2.1 Agricultural Market Systems (AMS) Approach

Agricultural Market Systems (AMS), according to USAID (2023), is another market concept, developed by USAID, which presents a systems view of the way agricultural markets operate. The AMS model shows the various ways in which agricultural markets work and identifies the improvements that can be made in order to make them effective in meeting the objectives of smallholder farmers. The AMS model is a useful framework for analyzing market systems. It acknowledges the fact that markets are complex adaptive systems made up of core market functions (buying and selling) market support services (finance, storage, transport and information) and the enabling environment (policies, regulations and infrastructure). This framework is especially useful in this study since it considers the fact that market failures need to be addressed from a systems level rather than from the narrow perspectives of just addressing production or market transactions.

Using the AMS framework, the problem of the cabbages in Shamva can be viewed through a systemic lens. Fragmented production without coordinated marketing, weak information systems, lack of storage facilities among other market inefficiencies results in cumulative market failure leading to low gate prices.

2.2.2 Value Chain Framework

The value chain model developed by Porter (1985) and later applied to agricultural development by Kaplinsky and Morris (2001) entails analyzing the entire range of activities involved in the production and consumption of a commodity from farm to consumer. As related to smallholder agricultural development, the concept of the value chain entails identification of actors, activities, product flows and information flows, and value distribution along the chain. The value chain model becomes significant in explaining the low participation of smallholder cabbage growers in Zimbabwe in capturing value at the consumer level despite carrying most of the production risks (Mhlanga et al., 2022).

Value chain upgrading strategies proposed by Humphrey and Schmitz (2002) comprise process upgrading (production efficiency improvement), product upgrading (quality enhancement for accessing high market levels), functional upgrading (participation in higher value chain activities like aggregating and processing) and chain upgrading (joining other value chains). Upgrading pathways form the basis of this study's proposed marketing strategy for smallholder cabbage farmers.

2.2.3 Transaction Cost Theory

The transaction cost theory, advanced by Williamson (1985) and applied in the agricultural markets by Key et al. (2000), provides an explanation for why most of the smallholder farmers prefer dealing with informal middlemen compared to formal buyers even when the prices paid by the former is lower. The transaction costs in agricultural markets consist of search and information costs (searching for buyers and getting information on prices), negotiation costs (negotiating terms of sales), monitoring costs (monitoring terms of sales and payment and quality assurance), and enforcement costs. If transaction costs with formal buyers are high, then it is rational for smallholder farmers to engage in less costly informal transactions.

Therefore, reducing transaction costs plays an important role in developing marketing strategies for the smallholder cabbage farmers in Shamva. This can be done by reducing information asymmetry using information systems and minimizing negotiation costs through collective marketing among others.

2.3 MARKETING STRATEGIES FOR SMALLHOLDER FARMERS

2.3.1 Collective Action and Cooperative Marketing

Many studies show that there is a significant positive effect on the marketing effectiveness of small farmers in developing countries due to the formation of co-operatives and producer groups (Bernard et al., 2010; Wollni and Zeller, 2007). Collective marketing allows farmers to sell their produce in bulk and therefore access the formal markets, thereby satisfying the quantity required by supermarkets and institutional purchasers. The practice allows farmers to have greater bargaining power compared to traders and middlemen, resulting in higher farm gate prices (FAO, 2021).

From research done in other countries in Sub-Saharan Africa like Kenya, Ethiopia, and Tanzania, it is evident that co-operative members get higher prices and improved market access compared to non-members (Verhofstadt and Maertens, 2014). In Zimbabwe specifically, Chikazhe et al. (2023) found out that farmers who used collective marketing of cabbage from Marondera earned about 23% more price than those using individual marketing. However, there is also a risk of failure of cooperatives where the governance structure of the organization is poor, there is little social capital and when external assistance is withdrawn (Birchall, 2004). Any effective marketing approach should include capacity building and governance structures for collective marketing arrangements.

2.3.2 Contract Farming and market Linkages

One of the methods by which buyers commit themselves in advance to purchase specified quantities and qualities of products at predetermined prices is contract farming, which offers a good platform to enhance smallholder market integration and income security (Eaton and Shepherd, 2001; World Bank, 2020). Contract farming protects farmers from price risks, facilitates input and extension services based on the buyer's quality needs and enhances access to formal sources of credit by proving a reliable source of income.

Nevertheless, literature notes considerable risks associated with contract farming among small farmers that include side selling (the practice whereby farmers engage informal sellers when spot prices are higher than contract price), contract hold-up (when buyers re-negotiate or default on

contract agreements after farmers' investment in improving quality) and monopsony power (the tendency for buyers to exploit their market power to impose unfavorable conditions) (Warning and Key, 2002). Successful models of contract farming in horticulture normally rely on multiple buyers in competition, clear terms of contract and organization of farmers as an intermediary institution (FAO, 2021).

2.3.3 Direct Marketing and Short Supply Chains

However, direct marketing where the farmer sells directly to the end-user or consumer without intermediary agents enables the farmer to retain the entire retail mark-up although requiring considerable effort in marketing expertise, transportation, and building consumer relations (Marsden et al., 2000). Direct marketing through such mechanisms as farmers' markets, community-supported agriculture programs, and deliveries to schools, hospitals, and other public institutions are some examples that have succeeded among smallholder vegetable farmers in various developing countries.

In Zimbabwe, through the national social protection scheme institutional procurement program, the government has provided an opportunity for smallholder farmers to market their produce directly to government schools and hospitals thereby cutting out the middleman. Nevertheless, participation in such institutional markets necessitates meeting certain requirements, including consistent product quality standards and supply scheduling abilities that most individual smallholder farmers may not be able to meet. A model that involves the aggregation of farmers for supply to institutional buyers is suggested in this study.

2.4 POST-HARVEST MANAGEMENT IN HORTICULTURE

2.4.1 Scale of Post-Harvest Losses

Losses after harvesting of vegetables constitute a serious limitation to income generation among smallholder farmers in sub-Saharan Africa. According to the Food and Agriculture Organization of the United Nations (FAO), post-harvest losses of fresh vegetables in sub-Saharan Africa range between 20-50%, with maximum losses registered in regions without refrigeration facilities where distances covered are high. Post-harvest losses of cabbages have been estimated at 25-40%

on-farm, while an extra loss of 10-15% is realized in transit because of damage, spoilage, and refusal by buyers (Nyamandi et al., 2022; Mhlanga et al., 2022).

This level of loss constitutes a significant cost to smallholder farmers and one of the main sources of food loss along the supply chain. Considering the case of farmers in Shamva and Goromonzi Districts who harvest crops and dispose of within a tight period to prevent spoilage, such losses prompt them to engage in distress selling that leads to lower farm gate prices and perpetuates a vicious cycle of low prices and losses (Chikazhe et al., 2023).

2.4.2 Low Cost Post-Harvest Technologies

Various studies have indicated low-cost post-harvest technologies that are affordable by small-scale farmers in developing countries and are highly effective in minimizing losses as well as increasing the shelf life of produce. Evaporative cooling storage (commonly referred to as zero-energy cool chamber) makes use of the concept of evaporative cooling to keep produce at a temperature 10-15 degrees Celsius below ambient temperature, hence increasing the shelf life of produce like cabbage by several days (Workneh and Osthoff, 2010). Construction costs of building a ZECC are estimated to be between USD 30-50 per unit which makes it an affordable option for individual or group farmers.

Other low-cost technologies that can be adopted include improved harvesting and handling techniques aimed at reducing physical injuries to crops, shade houses to reduce thermal stress at harvest points, polyethylene bags perforated to improve respiratory control during transportation and field packing points with grading stations. Use of these technologies in comparable contexts of small-scale farming in East Africa has reduced losses by 30-50 percent while fetching 10-20 percent premium prices from quality-conscious consumers (Kitinoja and AlHassan, 2012).

2.5 MARKET LINKAGES AND COLLECTIVE ACTION

2.5.1 Collection centres and aggregation model

Collection centers owned and managed by farmers themselves have been found to be a key institution innovation in enhancing market linkages for smallholder farmers in African horticulture. Collection centers are able to lower the transaction costs for buyers because they offer bulk buying as opposed to buying from multiple locations. For the farmer, the collection

center offers a known point of sale, makes grading and packaging more efficient and allows the development of a buyer relationship (Ashraf et al., 2009; SNV, 2020).

From experiences in Kenya where the KHCDA model has proved successful in linking smallholder vegetable farmers to supermarkets and export markets, the following lessons can be drawn. These are that for a collection center, there must be at least 50-100 farmers involved in its operations, good governance and profit sharing practices, proper sorting and storage facilities and links with the buyers (SNV, 2020). These are some of the key considerations that should inform a marketing strategy for smallholder cabbage farmers in Shamva.

2.5.2 Market linkages with formal buyers

It is common knowledge that the means by which farmers gain access to formal markets, such as supermarkets, wholesale markets and institutional buyers, can help them get higher and more predictable prices for their produce. However, buyers within formal markets tend to have standards regarding quality and quantities, as well as delivery schedule requirements that may not be easy for individuals to meet (Reardon et al., 2009). Studies on the relationship between modern retail markets and developing economies reveal that farmers accessing formal markets through formal channels tend to earn more than those accessing informal markets; however, formal markets discriminate against smaller farmers.

In Zimbabwe's case, supermarkets such as OK Zimbabwe and Pick 'n' Pay operate formal procurement programs in which high quality fresh vegetables are sourced. Unfortunately, the standards required in such programs exclude most small-scale farmers due to lack of quality, certification and group affiliations. It is therefore important to implement a strategy targeting these farmers.

2.6 Market Information System

Market information is critical to smallholder farmers' effective market engagement. MIS reduces information gaps between farmers and buyers; hence there is improved price bargaining and production decisions made on informed grounds (Kizito et al., 2012). Advancements in mobile phones in sub-Saharan Africa has paved way for cheaper distribution of price information to smallholder farmers. Various MIS programs using mobile phone technology in Africa have had success in enhancing smallholder farmers' market performance.

Some of these MIS projects in Africa that have contributed to improved market performance of smallholders include the Agricultural Market Information Service (AMIS) project in Uganda where daily price information was transmitted through SMS. As a result, more farmers were able to participate in markets and increase their income by about 15% (Fafchamps and Minten, 2012). Another example is the ZimTrade Horticulture Market Information Service which offers weekly prices of produce at various urban markets in Zimbabwe. However, only a few farmers benefit from this information because of lack of awareness of the program (ZimTrade Horticulture Review, 2023). Hence, an effective marketing plan in Shamva for cabbage growers should include market information services.

2.7 Marketing Challenges in Zimbabwe's Horticultural Sector

The marketing context for horticulture production among small-scale farmers in Zimbabwe is determined by structural, institutional and behavioral factors that negatively impact the performance of the markets. According to Mhlanga et al. (2022), the following are some of the main marketing problems faced by small-scale vegetable growers in Zimbabwe:

(i) fragmented production and marketing leading to weak bargaining power;
(ii) limited access to cold storage and transport infrastructure driving post-harvest losses and distress
(iii) price volatility resulting from uncoordinated production cycles and seasonal demand fluctuations
(iv) limited access to formal market channels due to quality and volume requirements
(v) inadequate access to agricultural finance for marketing investment
(vi) information asymmetries between farmers and traders.

This is corroborated by the findings from the other sub-Saharan African countries and field-level studies conducted in Mashonaland East Province in particular. Chikazhe et al. (2023) examined the marketing of cabbages in Marondera District and established that farmers received prices 23% lower than wholesale prices because informal middlemen captured the price margin at the farm gate. The aforementioned studies provide clear evidence that there should be an integrated marketing approach that tackles the mentioned constraints concurrently rather than sequentially.

The macroeconomic conditions of the country create extra complications in smallholder marketing. Economic instabilities, inflation, and the past effects of the Economic Structural Adjustment Programmes have challenged the input supply chain, the rural finance system and pricing and contract negotiations in the country (Mhlanga et al., 2022). In other words, any marketing strategy for smallholder farmers in the present-day economic conditions of the country needs to consider the macroeconomic situation, thus prioritizing low cost and flexible approaches over high capital approaches.

2.8 Conceptual Framework

Based on the Agricultural Market Systems framework (USAID, 2023), the value chain framework (Kaplinsky and Morris, 2001) and transaction cost theory (Williamson, 1985; Key et al., 2000), this research presents an analysis framework that considers the smallholder cabbage farmer at the core of three interrelated dimensions of marketing systems performance.

Market access and linkages refer to the means of linking farmers to buyers. It is influenced by collective action capability (farmers' groups and cooperatives), transaction costs (information, negotiation and enforcement) and the structure of the value chain (number and types of market actors). Post-harvest management refers to technologies, infrastructure and practices governing the quality and quantity of produce sold. This determines not only the volume of produce available for selling but also the premium earned from quality produce. Thirdly, market information and governance concerns the information flows regarding prices, demand and quality and the institutional arrangement (policies, standards and regulations) governing market transactions.

The conceptual framework hypothesizes that when the improvements in all three areas take place through a strategic, farmer-centered marketing approach, better market performance outcomes will be realized among small scale cabbage growers, as evidenced by their gate prices, post-harvest losses, amount of sales made via formal marketing structures, and consistent income generation from season to season. These factors are part of the bigger picture involving income enhancement, food security, and rural development.

2.9 Summary

In this chapter, a review of important theoretical and empirical literature pertinent to the formulation of a marketing strategy for smallholder cabbage farmers has been conducted. The review has shown that marketing problems, not production issues, are the main obstacle preventing smallholder vegetable farmers in Zimbabwe and similar settings from enhancing their livelihoods. From this literature review, it is evident that collective action, effective post-harvest handling practices, enhanced marketing links, and more accurate marketing information are the necessary interventions that need to be implemented to enhance marketing performance.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Description of the study area

This research will be undertaken in Shamva, which lies in the province of Mashonaland Central in Zimbabwe, about 90kms north of Harare. The district has an estimated area coverage of 3 860 sq km and a population of around 150 000 (as per 2022 Zimbabwe Population and Housing Census), the majority of whom engage in smallholder farming activities (ZimStat, 2022). It has an average annual rainfall of 750-900mm, which falls mainly in the months of November to March, making it fall within the Agro-Ecological Region II which is described by the reliability of its rain, making it suitable for crop intensive production, such as horticulture (Mavedzenge et al., 2021). Its average temperature is 18-24 degree Celsius, with summers occasionally rising to 30 degrees Celsius. This makes it a favorable environment for cabbage cultivation. Its soils are sandy loam, moderately fertile, and derived from granite with occasional clay loam soils in bottomlands. These soils are usually well drained but need soil amelioration to achieve high yields of cabbage (Carol's seedlings, 2025).

Shamva district can be said to have relative geographical proximity to the urban market in Harare city (90km away from the main urban center along a tarred road). The majority of smallholder farmers in the selected area operate under A1 and communal land tenure system, as distributed by Zimbabwe government under the Fast Track Land Reform Program with average plot size ranging between 1-5 ha (Underwood et al., 2024). Cabbage production occurs throughout the year through irrigation from rivers, boreholes, and small dams, thus farmers can supply the urban market even during rain-fed and dry periods.

Shamva District was chosen because it presents a common example of a smallholder cabbage production area in peri-urban Zimbabwe that has been experiencing marketing difficulties as highlighted in the research problem (Chikazunga and Paradze, 2023; Moyo et al., 2024; ZimTrade, 2025). It also benefits from the availability of extension services through AGRITEX offices within Shamva town and growth points.

3.2 RESEARCH DESIGN

Quantitative methodology was chosen in this study as it would give a statistically representative understanding of the marketing challenges and marketing practices among the smallholder cabbage farmers in Shamva. Quantitative approach was chosen over a mixed approach due to the following reasons. To begin with, the study required quantifying the marketing challenges faced by farmers and measuring their frequency in order to generalize about marketing challenges experienced by smallholder cabbage farmers within Agro-ecological Region II. Second, qualitative studies have already been done and documented about the marketing challenges faced by horticultural smallholders within peri-urban areas of Zimbabwe (Chikazungu and Paradza, 2023; Moyo et al., 2024). This approach allows for the measurement and analysis of important variables within the representative sample of 120 farmers in Shamva. A cross-sectional survey design was used to capture information about the marketing challenges faced by the farmers. Cross-sectional design gathers information about the sample population during one period, without follow-ups. Cross-sectional design is most appropriate in this case since we need prevalence estimation and resource effectiveness.

3.3 JUSTIFICATION

Quantitative methodology has been chosen to guide the research process in this study. The reason why quantitative design is more suitable in this case is that it makes it possible to quantify various variables such as production levels, prices at the point of sale, percentage of post-harvest losses, and choice of marketing channels among others in relation to small scale producers of cabbages. This is because this methodology will be able to meet the objective of determining the extent of marketing problems such as prices fluctuations among others.

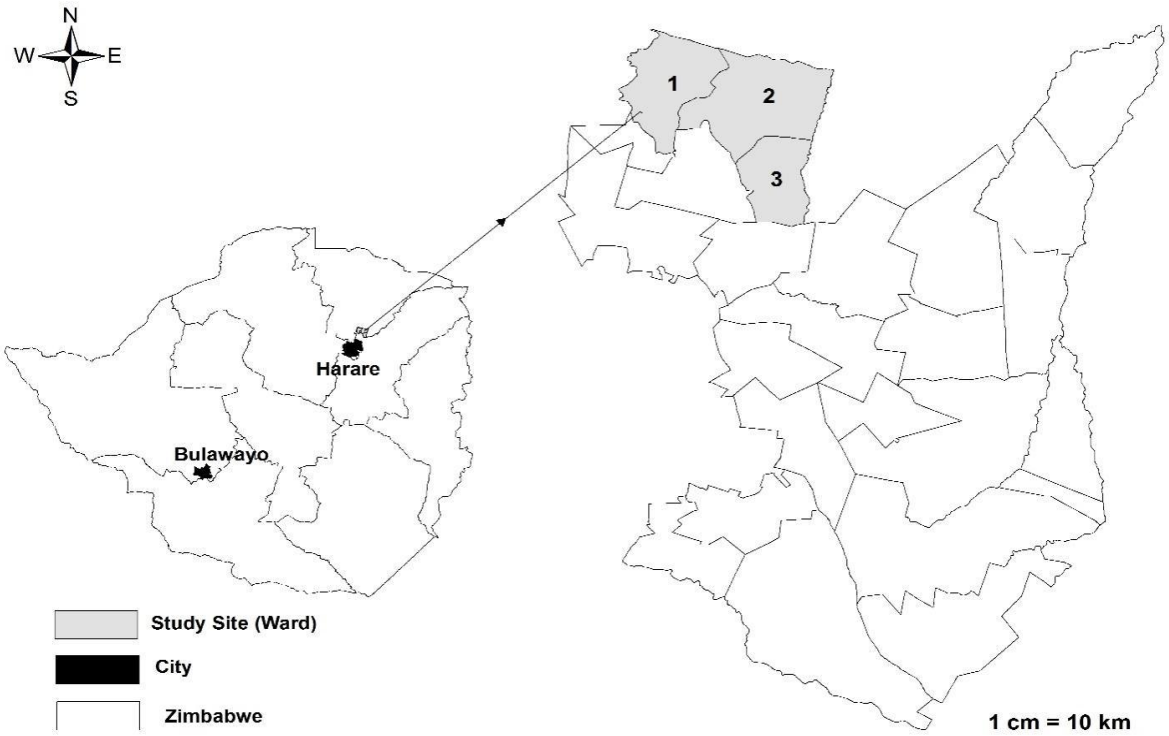


Figure 1 map showing Shamva District

3.4 DATA COLLECTION

3.4.1 Primary data collection

Primary Data Collection: Primary data were gathered through the use of a structured questionnaire conducted amongst smallholder cabbage farmers in the study area.

Structured Household Survey: A structured questionnaire was conducted among 120 smallholder cabbage farmers in Shamva District. The structured questionnaire collected information on aspects such as farms characteristics (land area under cabbage farming, production levels and input use), marketing methods (marketing channels employed, selling price and selling frequency), estimated postharvest losses (volume of losses incurred, reasons for losses, storage techniques), market linkages (farmer associations, buyer relations and contract arrangements) and market problems and perceptions. The structured questionnaire was piloted among 10 farmers from Mazowe district (the neighbouring district with similar smallholder cabbage farming system but not included in the main data collection sample). According to pilot findings, the following changes were implemented before main data collection: Redesigning the layout of

the price recall table for each season to increase font size and clear column headings minimizing data entry mistakes during piloting. The questionnaire surveys were conducted by professional enumerators who used both English and Shona languages. Ethical clearance was sought prior to data collection from the Bindura University of Science Education Research Ethics Committee. Informed written consent was gained from all the participants after they were told about the purpose of the study, that participation was completely voluntary and that they could pull out of the study anytime without fear of reprisals. Anonymity and confidentiality were guaranteed throughout the process.

3.4.2 Secondary data

Secondary data was sourced from three broad groups of secondary sources. Firstly, secondary data was obtained through literature from books and articles that have been published in peer-reviewed journals. The purpose of this was to situate the primary data findings against the existing body of literature on small farmers' marketing, value chains, post-harvest handling, and collective actions. Secondly, secondary data was obtained from official policy and development reports, and also documents from organizations involved in international development and government agencies. This was intended to provide information concerning agricultural market structures, post-harvest losses, and policy framework. Thirdly, secondary data was obtained from agricultural and extension service statistics at the district level and also from farmer register reports from AGRITEX offices in Shamva District.

3.4.3 Sampling and Sample size Determination

The target population consisted of all small-scale cabbage farmers in Shamva district who have been growing and selling their cabbages. According to the records kept at AGRITEX, there were approximately 800 registered small-scale horticultural farmers in the district. From the total population, 600 were identified as producers of cabbages. Stratified random sampling technique was employed in the selection of the interviewees. The following strata were employed: (i). Ward, Shamva District consists of 27 wards, with varying levels of cabbage producers. First wards were stratified into three categories depending on the level of density of cabbage farmers (high, medium and low), as indicated by AGRITEX. The sampling was done proportionally to the size of cabbage farmers within each ward. (ii). Gender, a gender criterion was used to ensure that the sample size was at least 40% female respondents as indicated as the active percentage of

cabbage producers in the district. (iii). Access to Irrigation, farmers were stratified based on irrigation source, which included river diversion, boreholes, small dams or rain-fed.(iv) Membership in farmer groups; in this study, a minimum of 30% of the sample population consisted of farmers who were already engaged in collective marketing and farmer groups so as to enable comparison between members of the group and those outside the group. Sample size (number of farmers) was selected using the Yamane Taro (1967) formula: n = N / (1+N(e^2)); Where N = 800 (Population); e = 0.09 (acceptable level of margin of error at 91%). Substituting: $n = 800 / (1 + 800 \times 0.09^2) = 800 / (1 + 800 \times 0.0081) = 800 / (1 + 6.48) = 800 / 7.48 \approx 107$, a minimum of 107. Thus the sample was set at 120 considering potential non-response cases. Proportional allocation was applied in sampling the 120 farmers. The following wards in Shamva District produce cabbage: Wards 3, 5, 7, 9 and 11The number of registered cabbage farmers in each ward was determined from the AGRITEX register for each ward, and the sample allocation to each ward was done by computing: Ward sample = (Number of ward farmers / Number of farmers in total) x 120. As an illustration, in Ward 7, with roughly 180 registered farmers from the 600 farmers in total, the sample was made up of 180/600 x 120 = 36. This procedure was done for all wards, ensuring that those wards with large numbers of registered farmers provided relatively more samples. Systematic random sampling was then used to select individual farmers within each ward by determining a sampling interval of k=number of farmers in each ward / number of samples to be drawn and selecting each k-th registered farmers in the AGRITEX registers. Gender quotas were used at the ward level in selecting the samples by ensuring that each ward contained at least 40% female farmers, owing to the high involvement of women in cabbage farming in the district. In cases where systematic sampling failed to provide enough female farmers, purposeful replacement of those selected farmers by those in the AGRITEX register was made.

3.4.4 DATA COLLECTION FRAMEWORK TABLE

Table 1: Data Collection Framework

Specific Objectives	Data Concepts/Variables	Collection Methods/Tools	Respondents/Subjects
Determine market	Buyer channels, price	Survey questionnaire	120 farmers

linkage mechanisms	differentials, collective action, contract participation		
Identify post-harvest interventions	Loss volumes, storage types, handling practices, temperature management	Survey questionnaire	120 farmers, AGRITEX officers
Determine marketing challenges	Price volatility, infrastructure, market information access, quality standards, finance access	Survey questionnaire	120 farmers

3.4.5 Data Analysis Methods

Quantitative data collected from the household survey were captured in SPSS and analyzed using descriptive statistics, such as frequencies, mean, standard deviations and percentages in order to describe the characteristics of the farming population and summarize the marketing practices and losses incurred. Associations were assessed using cross-tabulation and chi-square test among farmer groups and their corresponding market outcome such as prices and losses. In these tests, the farmer group served as an independent variable whereas price and post-harvest losses served as the dependent variables. Inferential statistics were performed if the conditions for sample sizes and distribution of data were met using p-value of <0.05. Apart from the use of chi-square, differences between means on price and loss rates of farmers that belong to a farmer group compared to those that do not belonged was performed using independent sample t-test while difference between more than two groups of land holding types was determined by one way ANOVA.

Value Chain Analysis of Cabbage Marketing Using Value Links (GIZ, 2007)

The value chain analysis of cabbage marketing is done with the use of the value links approach (GIZ, 2007) which relies not only on the results of field survey but also includes market actors' information as well as data concerning margins and value distribution along the value chain. This approach is best suited for analysis of cabbage marketing since its special focus lies on identification of bottlenecks of vertical coordination, calculation of margins per value chain node and identification of services needed. All those aspects play an important role in marketing analysis of highly perishable produce such as cabbage since post harvest loss and transactions costs along the value chain greatly affect the incomes of small scale producers. Value Chain Mapping illustrates the flows of cabbage from production up to consumption and identifies key actors as well as functions performed and margin estimated on each step of the value chain.

A SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis of the quantitative survey findings was undertaken to develop a strategic marketing plan for smallholder cabbage production. The SWOT analysis involves combining information on the internal marketing environment (farmers' marketing strengths and weaknesses) with information on the external marketing environment (marketing opportunities and threats) to lay a strategic basis for the marketing plan being recommended. For each of the four components of SWOT analysis, criteria were used in interpreting the quantitative results for the purposes of developing the marketing strategy. Strengths and weaknesses involved translating quantitative results on variables under the direct control of the farmers through descriptive statistics (such as percentage). For instance, where ≥70% of the farmers indicated that a particular variable, such as membership in a producer group, transportation availability and post-harvest losses, had a positive influence, it was considered a strength, while ≤30% was considered a weakness. Opportunities and threats, on the other hand, were deduced from information on the external marketing environment using frequency criteria whereby where ≥50% of the farmers viewed a particular variable as a problem, it was regarded as a threat, while ≥40% viewing it as a positive development was an opportunity. According to Mugiyo et al. (2024), this evidence-based translation ensures the SWOT matrix is grounded in quantifiable indicators rather than subjective judgement.

Table 2: Data Analysis Framework

Specific Research	Hypothesis/Theory/	Variables/indicators	Data analysis tools

Objective	Concepts		
To determine the market linkage mechanisms in order to improve volume consistency, bargaining power for farmers in Shamva.	Transaction Cost Theory; AMS (Agricultural Market System)	Buyer type, price received, group membership	Descriptive statistics, chi-square test, value chain mapping
To identify and assess low cost post-harvest handling and storage interventions that reduce losses for the smallholder cabbage farmers.	Value chain upgrading theory	Loss volumes, storage type, shelf life	Descriptive statistics, cost-benefit analysis
To determine the market challenges faced by smallholder cabbage farmers in Shamva.	Market System Access Theory	Challenge frequency, severity rankings	Descriptive statistics, SWOT analysis

3.5 Ethical Considerations and Limitations

Consent forms were completed by all participants before engaging in the study. Information was provided regarding the aims of the study, respondents' rights to withdraw without penalty and measures put in place to ensure anonymity and confidentiality. The use of personally identifiable information was not included in this study. Data collected via the survey tool were kept safe on password protected devices that only the researcher had access to. Ethical clearance was granted by the Research Ethics Committee of Bindura University of Science Education.

The study has several limitations. First, the study sample consisted of registered AGRITEX officers; therefore, some of the most marginalized farmers might not have been well captured in this study. Further, self-report data about production and losses may have been prone to recall bias and social desirability bias, which may have been addressed by triangulation with

observational data. Also, due to the seasonal cross-sectional approach used to collect primary data, variations between years with regard to production and marketing conditions could not be assessed. Finally, findings from this study can only be generalized to districts with similar agro-ecological and socio-economic environments to Shamva district.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

The descriptive analysis and frequencies that have been done to describe the smallholder cabbage production and marketing in Shamva are presented in this chapter. This is done following the three research objectives that are to establish the challenges facing the market for smallholder cabbage farmers, to establish the possible market linkages that will enhance the volume and bargaining power of smallholder cabbage farmers, and to establish cheap methods for post-harvest handling and storage.

4.2 PRESENTATION OF RESULTS

Figure 4.2.1 Gender Distribution of Respondents

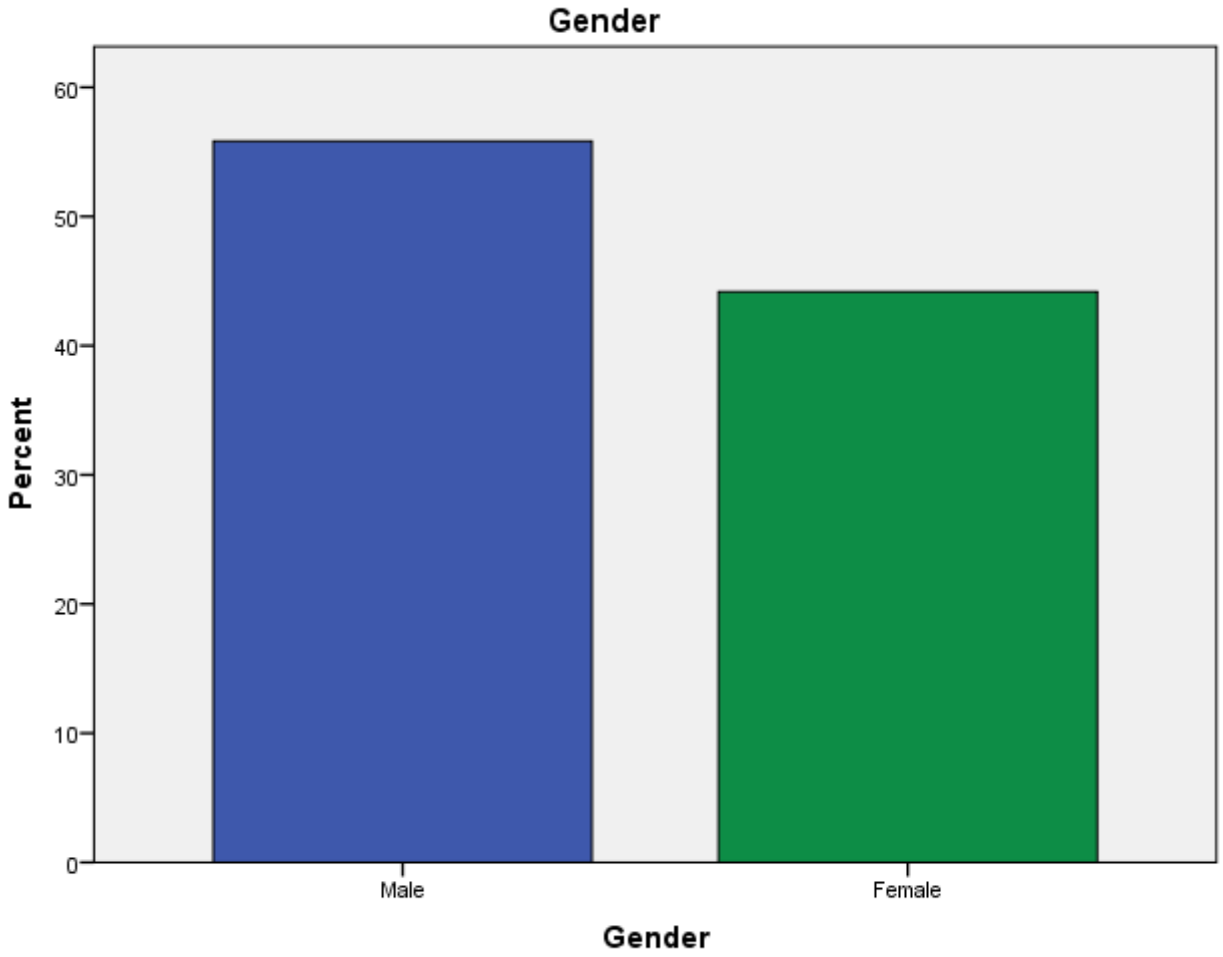


Figure 2. 4.2.1 Gender Distribution of Respondents

Bar chart indicates that 55.8% respondents were males (n=67) while 44.2% were females (n=53). This preponderance of men is in line with the existing trends in Zimbabwe's smallholder horticulture sub-sector wherein men form the greater proportion of vegetable farmers on the basis of gender distribution of agricultural labor (FAO, 2021; Mavedzenge et al., 2021).

Figure 4.2.2: Marital Status of Respondents

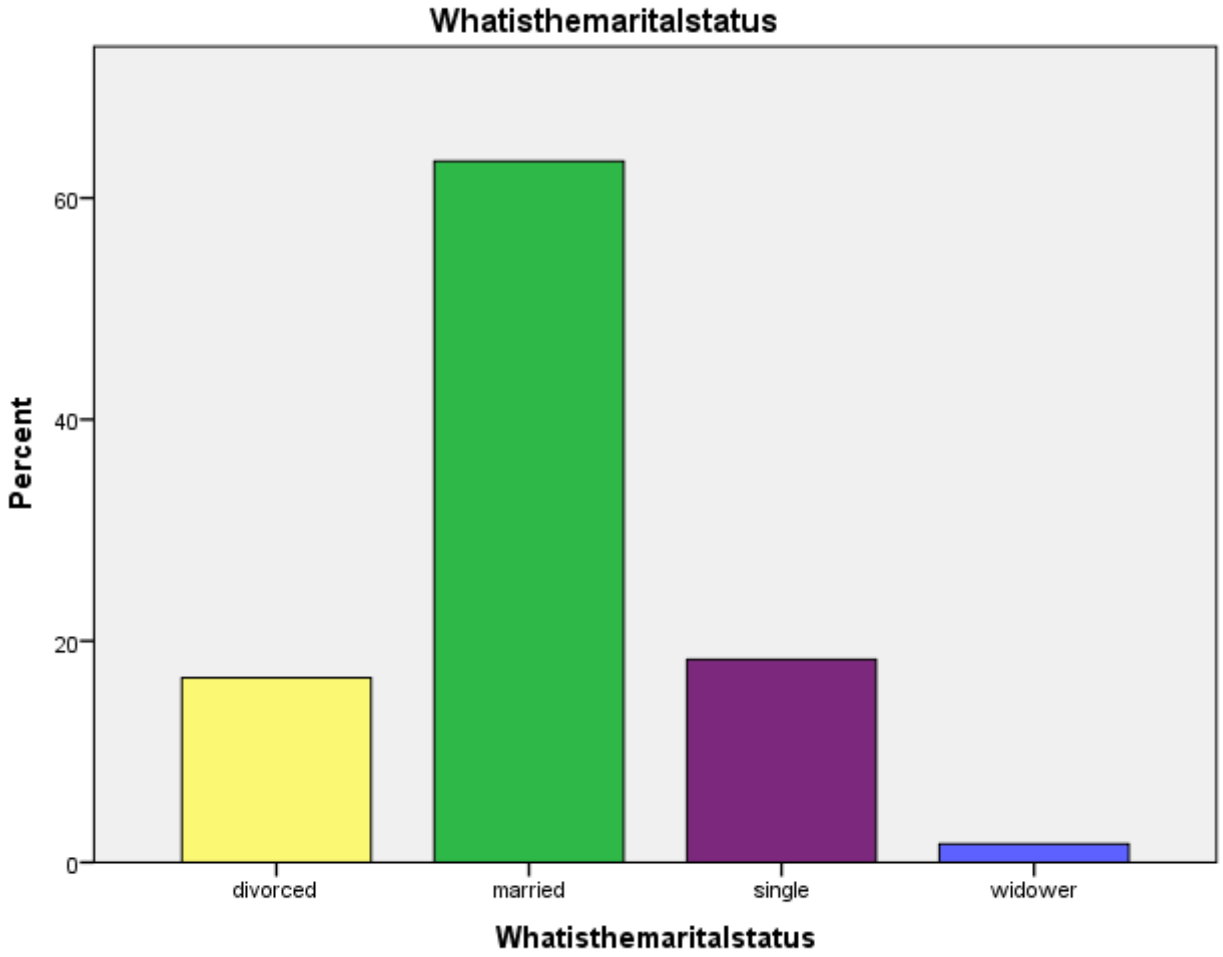


Figure 3. 4.2.2: Marital Status of Respondents

Marital Status: As shown in the chart above, the largest group of respondents (63.3%) was married respondents, followed by widowed respondents (18.3%), single respondents (16.7%) and divorced respondents (1.7%). The higher percentage of widowed respondents in this study is consistent with national trends in Zimbabwe rural areas where mortality, migration and fragmentation of families have led to increased numbers of widowed or female headed households in rural areas in Zimbabwe (ZIMSTAT, 2022). The impact of the trend on marketing strategy formulation should be noted as households headed by widows or unmarried people might lack labour power for both farming and marketing purposes. Therefore, marketing activities involving marketing groups would benefit households headed by unmarried people more than others (Chikazhe et al., 2023; Mwangi and Karani, 2024). Mhlanga et al. (2022) have

also highlighted the significant role of marital status on farm management and labour availability within the household.

Figure 4.2.3: Main source of livelihood of respondents

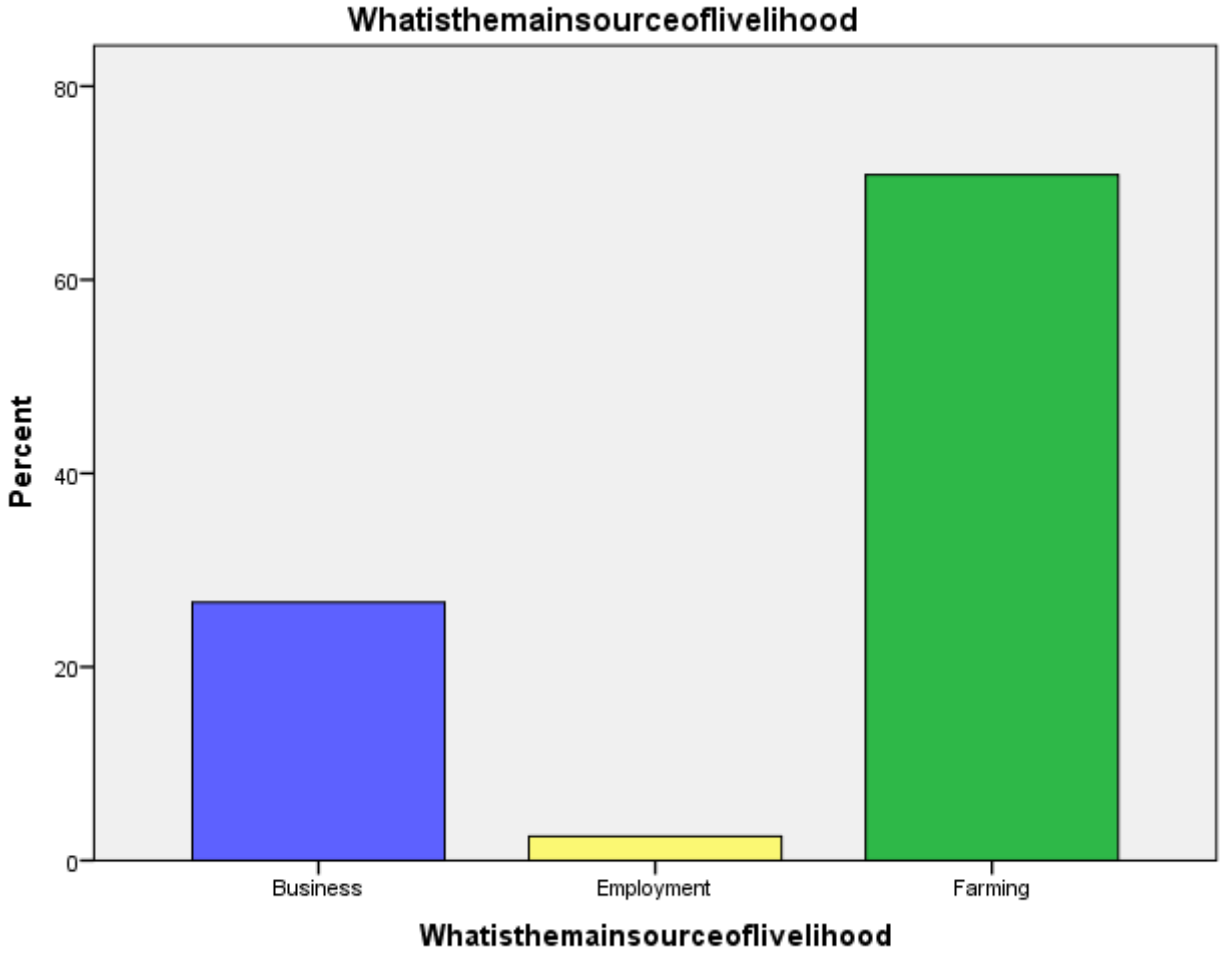


Figure 4. 4.2.3: Main source of livelihood of respondents

The distribution of livelihood sources among the study area's respondents is presented in Figure 4.2.3 below. It is evident that the overwhelming majority (70.8%) considered themselves engaged in farming while (26.7%) reported that business constituted their main livelihood while (2.5%) mentioned as employment either formal or informal work. A Chi-square test for goodness-of-fit was performed to establish whether the distribution of respondents' answers between the three types of livelihood differed significantly from equal distribution, i.e., (33.3% each). The frequencies observed in the sample of 120 respondents were 85 for farming, 32 for

business and 3 for employment. Under the null hypothesis of equal distribution, the expected number of respondents within each category was 40. Therefore, the chi-square value obtained was $\chi^2 = \Sigma (O-E)^2/E = (85-40)^2/40 + (32-40)^2/40 + (3-40)^2/40 = 50.625 + 1.6 + 34.225 = 86.45$. Degrees of freedom were 2, resulting in p-value less than 0.001 which means that the difference is statistically significant and farming can be identified as predominant livelihood source in the study area. This extreme reliance on farming by most of the respondents is an indicator of the high significance of the effect agricultural marketing has on households' well-being. With farming being the main source of livelihood, the impact of the unstable pricing regime and marketing failures results in an unstable source of income and vulnerability to poverty. The implication is that there is an immediate need for an effective marketing strategy considering that access to the markets and increased farm gate prices are fundamental interventions towards improving the livelihoods of these farmers (World Bank, 2020; FAO, 2022). This result is consistent with the findings of Chikazhe et al. (2023), who noted that livelihoods based on agriculture were negatively affected by market failures compared to diversified livelihoods.

Figure 4.2.4 Training in agriculture among respondents

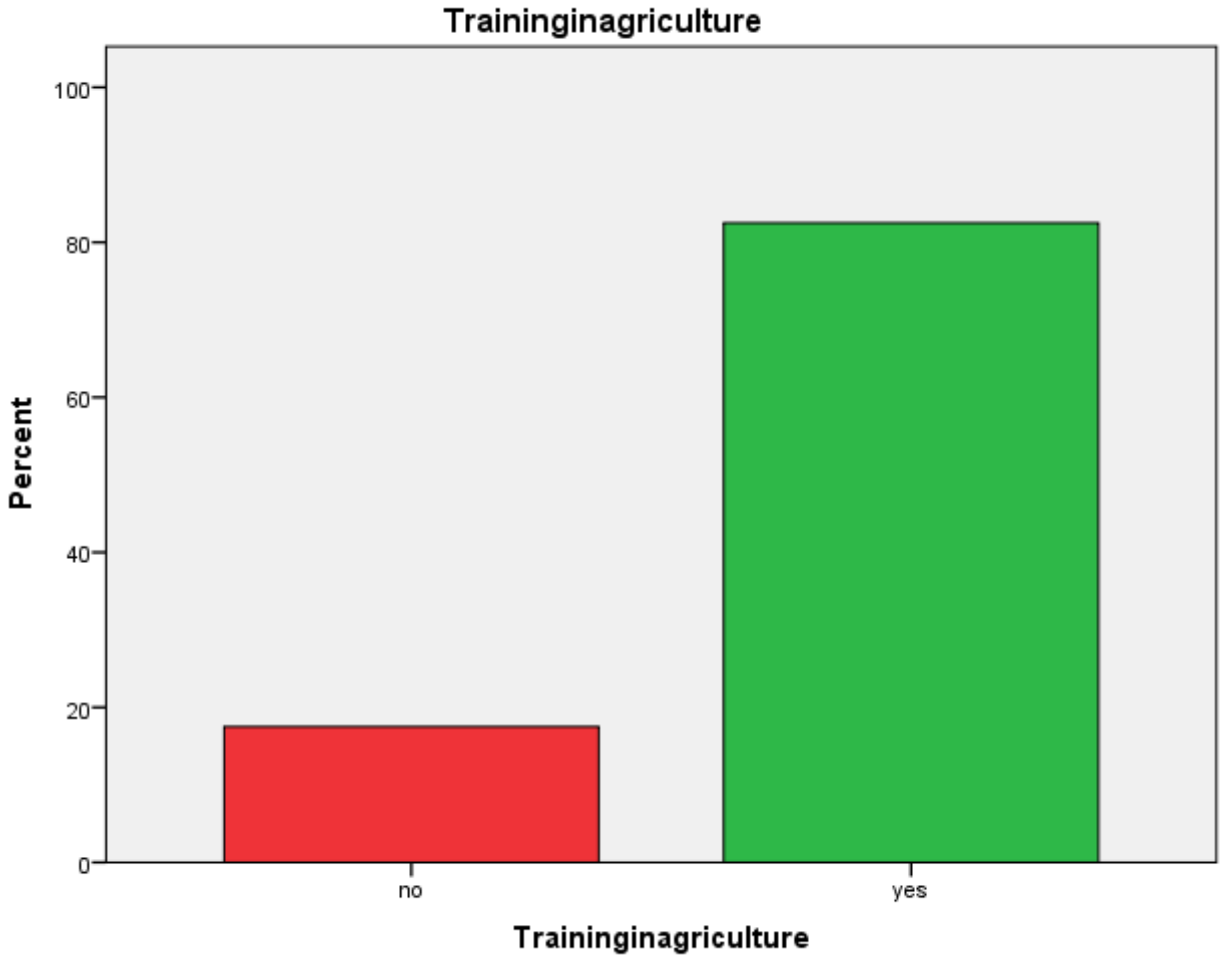


Figure 5. 4.2.4: Training in agriculture among respondents

The results of training received in agriculture are presented in figure 4.2.4. It is evident that a majority of the respondents (82.5%) were trained in agricultural practices whereas (17.5%) have not received training. However, despite the significant training provided in Zimbabwean agricultural farms, results from other surveys indicate that post-harvest losses are high (31.6%) as well as access to information related to the market. This is an indication that there could be a concentration on production training rather than marketing or post-harvesting practices, however, a causal relationship cannot be established without further investigation. This is supported by the findings made by Nyamandi et al. (2022) in their study regarding the production-centred curriculum of agricultural extension services in Zimbabwe. Similarly, post-harvest and marketing training have been identified as one of the major constraints for smallholder commercialization by USAID (2023). In order to establish whether training affects marketing

activities, a cross-tabulation between the variables is proposed. This analysis will only demonstrate the existence of a relationship, and not causality, since training-seeking individuals may differ in other aspects too. Thus, although the higher training rates are appreciated, the suggested marketing strategy should not presume that extra training by itself will solve problems but instead should be combined with some institutional measures like collective marketing and post-harvest facilities.

Table 3: Cross-tabulation of training status by post-harvest loss category

Training received	High loss (>30%)	Low loss (â‰¤30%)	Total
Yes (82.5%)	54	45	99
No (17.5%)	15	6	21
Total	69	51	120

A crosstab analysis of the training variable versus the post-harvest loss classification variable (high loss >30% or low loss ≤30%) indicated that while 54.5% of the trained respondents had high losses, 76.2% of the untrained respondents also had high losses. Yet, when tested using a chi-square test of association, there was no significant association between the two variables at the 5% significance level ($\chi^2 = 3.34$, df = 1, p = 0.068). The implication is that simply training the farmers may not necessarily lead to lower post-harvest losses.

Figure 4.2.5 Highest education level of household head

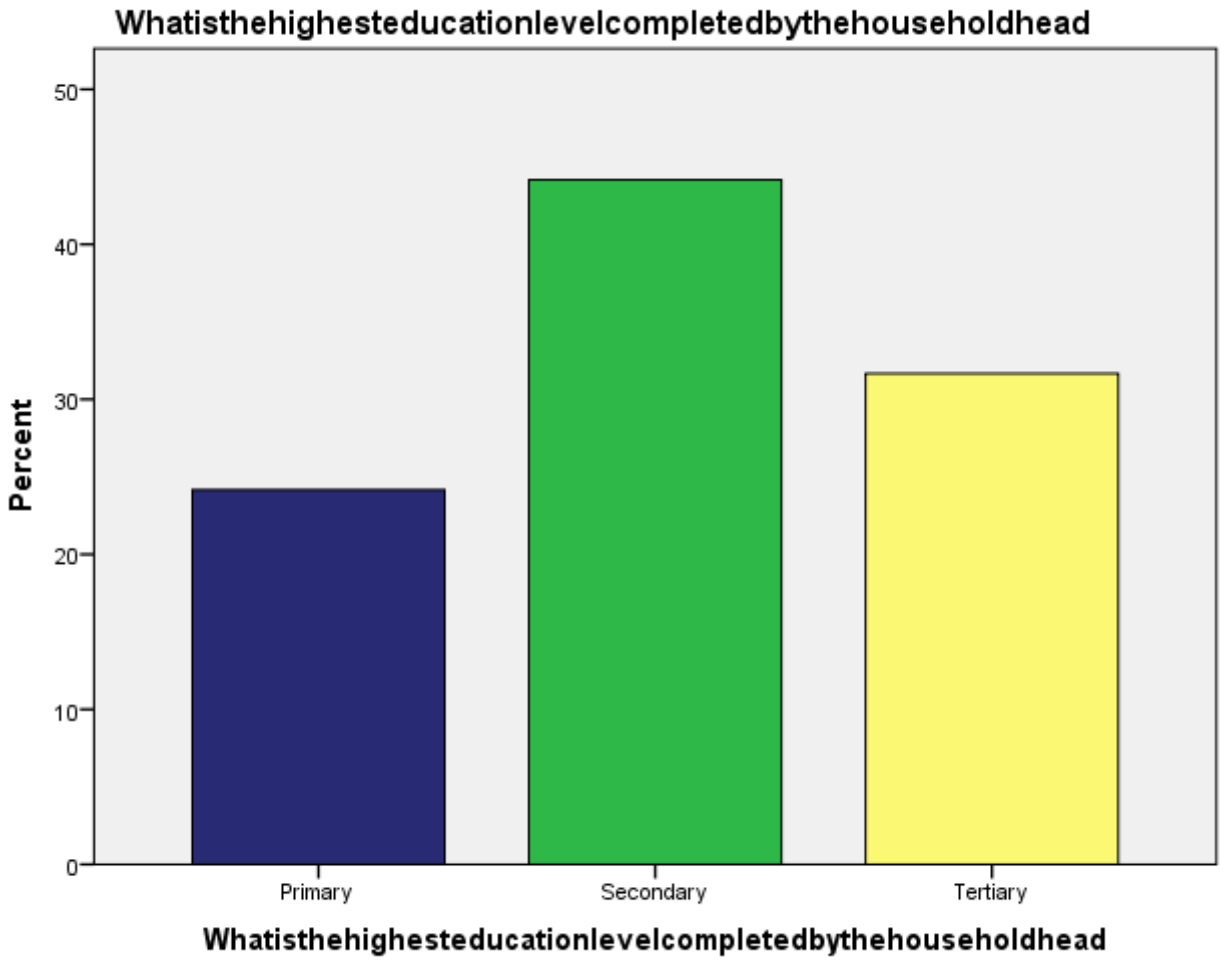


Figure 6. 4.2.5 Highest Education level of household head

Figure 4.2.5 displays the highest level of educational attainment for the household head among the respondents. According to the information provided, (44.2%) of the respondents had secondary education attainment, (31.7%) had tertiary education, while (24.2%) had primary education. It should be noted that the high levels of educational attainment among the farming population are rather remarkable in light of smallholder farming in sub-Saharan Africa, being related to the location of the research area which has better educational facilities than remote rural areas (ZIMSTAT, 2022). Education level and use of marketing practices: To determine if there is a relationship between educational attainment level and marketing practices adoption, a chi-squared test was applied. Respondents' education level was compared with adoption of at least two marketing practices (sorting products prior to selling them, making notes or having signed agreements with the buyers). Those with secondary and tertiary education proved to adopt

formal marketing practices (38.6%) significantly more often compared with those with primary education (13.8%) ($\chi^2 = 7.8$, df = 2, p = 0.020, Cramér's V = 0.26, small-to-moderate effect). This result corroborates findings of Mhlanga et al. (2022) and Chikazhe et al. (2023). Market information on prices and education levels: A third chi-square test analyzed the relation between education level and the frequency of accessing market price information prior to selling products. Farmers with secondary and/or tertiary education were found to access price information regularly at a rate of 31.4%, whereas those with primary education did at a rate of 11.1% ($\chi^2 = 9.4$, df = 3, p = 0.024, Cramér's V = 0.28). Hence, there seems to be some correlation between education level and the initiative to seek for market information, probably because of higher mobile literacy rates. Thus, the marketing plan should take into consideration that farmers with primary education might require low-literacy market information tools to avoid being excluded from its benefits. Participation in collective marketing practices and education level: The fourth chi-square test was conducted to see whether there was any relationship between the two variables. There was shown a significant association ($\chi^2 = 6.9$, df = 2, p = 0.032, Cramér's V = 0.24), where tertiary-educated farmers had a 47.4% participation rate, secondary-educated ones – 29.8%, and primary-educated farmers – 17.2%. Avoiding causal inference becomes critical here, considering that factors like land size, income levels from farming, and distance from the offices of AGRITEX could independently influence both educational status and belonging to the farmer groups. The important message that can be derived from the results of the analysis conducted above is that the proposed marketing cooperatives will have to make sure that the board and governing documents are developed in such a way that allows even low-literacy farmers to understand and participate. In addition, the fact that about one-third of the respondent-farmers had college education becomes valuable for the implementation of the proposed marketing strategy since these farmers are likely to become adopters of mobile marketing and governance systems (SNV, 2020; FAO, 2021).

Figure 4.2.6 Land ownership status of respondents

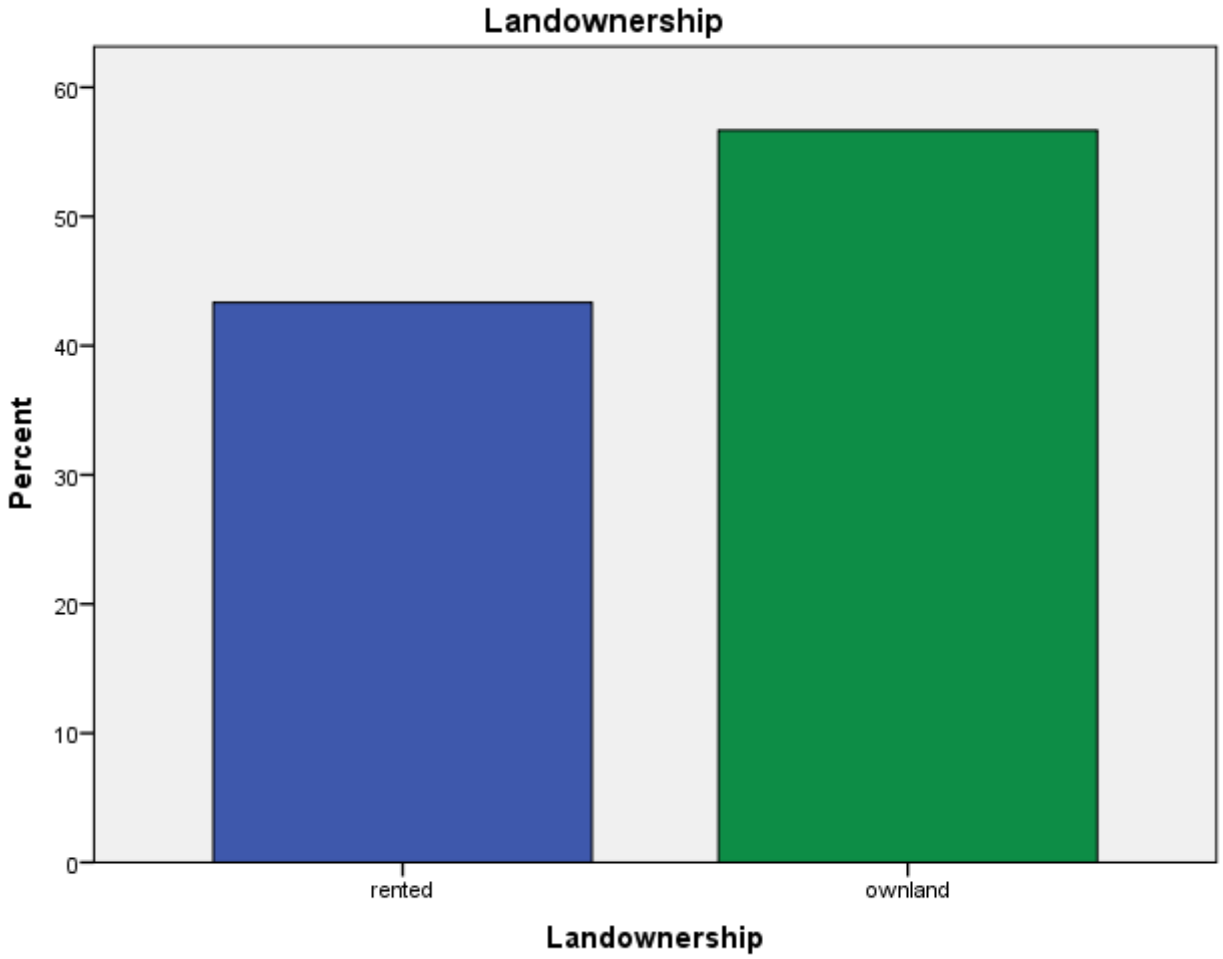


Figure 7. 4.2.6 Land ownership status of respondents

The land ownership position of the respondents is illustrated in Figure 4.2.6 below. It emerges from the results that (56.7%) of the respondents owned the land on which they were farming, while (43.3%) were working on rented land. The significant number of respondents with rented lands has significant implications for the proposed marketing strategy. Renting farmers have an extra cost to deal with, which is the cost of renting land; hence, they will make profits but not as much as the land owners who will earn maximum profits. Renters are unlikely to engage in investments on the farm like building storage or shade shelters due to the uncertain tenure (Nyamandi et al., 2022). Insecurity of tenure has been established as a primary constraint towards smallholder investments on post-harvest infrastructure in the horticulture industry in Zimbabwe (FAO, 2022; Mhlanga et al., 2022). The suggested collection centre approach solves this problem by locating the post-harvest infrastructure at secured sites instead of individual

farms (Reardon et al., 2021).The likelihood of making these investments is greater for owners compared to renters, who may experience fewer losses and have better market timing. To find out if land ownership correlates with lower losses, cross-tabulation was done between the two, using the loss levels (high losses of >30%, and low of ≤30%), presented in Table 4.2.6.

Table 4. 4.2.6: Land ownership by post-harvest loss level

Land status	High loss (>30%)	Low loss (â‰¤30%)	Total (n)
Owner	32 (47.1%)	36 (52.9%)	68
Renter	37 (71.2%)	15 (28.8%)	52
Total	69	51	120

Statistical analysis using chi-square test of independence showed that there was a statistically significant relationship between land ownership and loss levels after harvest ($\chi^2 = 7.16$; df = 1; p = 0.007). The owners reported having significantly fewer losses than the tenants. This is probably because owners make significant investments in terms of on-farm storage and/or handling facilities, as well as efficient harvests. Because tenants do not have security of tenure, they tend to underinvest in the aforementioned facilities, leading to higher losses. In terms of marketing strategies, collective infrastructure such as collective centers with cool chambers would be important for tenants.

Figure 4.2.7 Frequency of accessing market information

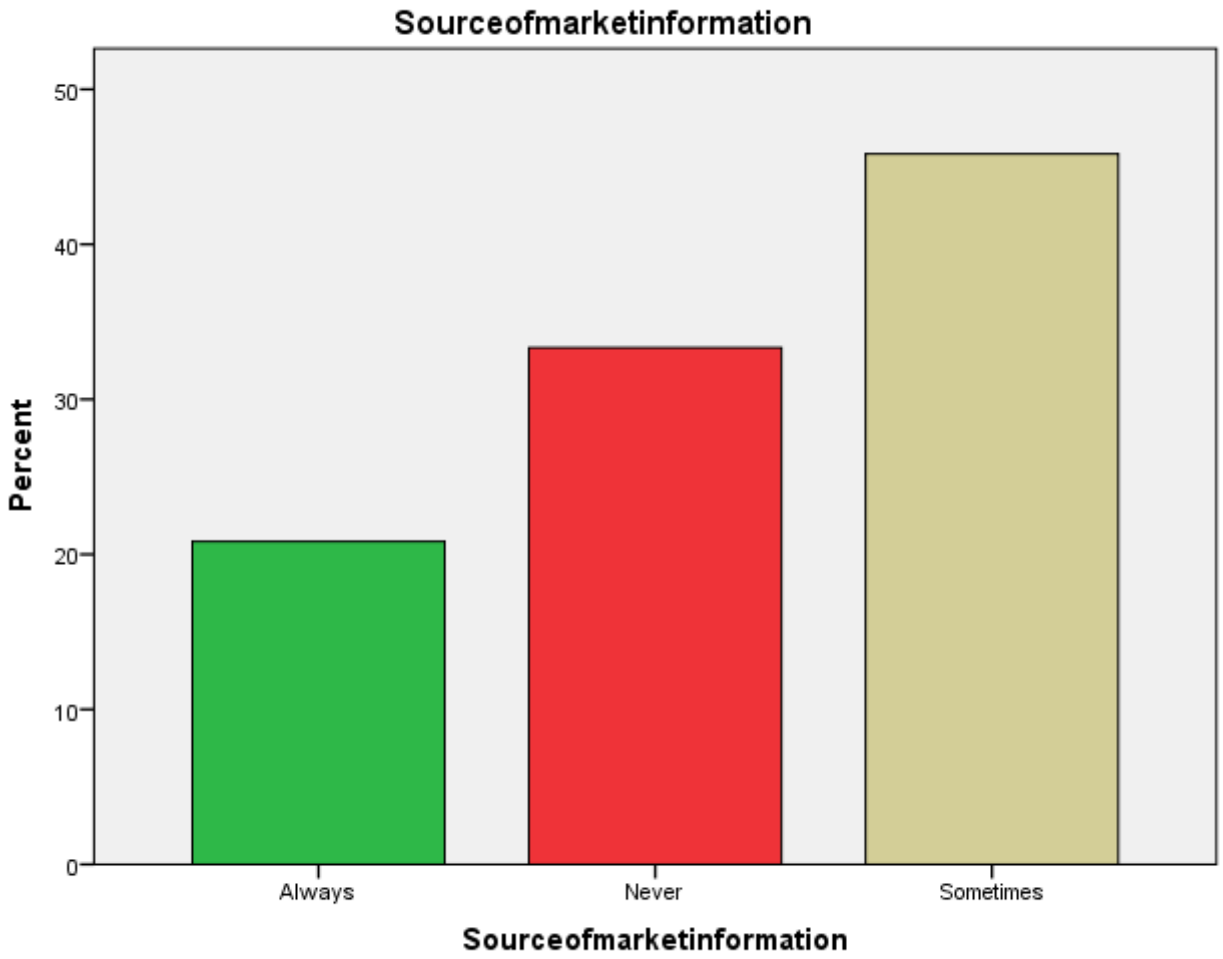


Figure 8. 4.2.7: Frequency of accessing market information

The figures in Figure 4.2.7 above show the level of utilization of market price information by respondents prior to making any selling decision. From the results shown above, it can be seen that (45.4%) of the respondents used the market information sometimes, (33.3%) never used the market price information when making the sell while only (20.4%) used the information always before making selling decisions. It is evident that less than one-fifth of the farmers consistently used market information prior to the sale meaning that most of the sales decisions were done under an information imbalance putting the farmers at risk of being exploited due to poor market price information as the middleman had more information about the prices (ZimTrade, 2023). The findings above correspond with those documented by Chirwa et al. (2020) on the existing imbalance between the availability and use of market information in Sub-Saharan Africa because of low awareness of market information platforms and mistrust in traders' dissemination of price data.

Table 5. 4.2.7: Logistic regression results factors associated with formal market participation

Variable	Coefficient (B)	Std. Error	Wald	p-value	Odds ratio (Exp B)
Constant	-3.21	0.67	22.96	<0.001	0.04
Market information access (always vs. not always)	1.48	0.41	13.03	<0.001	4.39
Farmer group membership (member vs. non-member)	1.12	0.38	8.68	0.003	3.06
Education (secondary/tertiary vs. primary)	0.65	0.35	3.45	0.063	1.92
Land ownership (owner vs. renter)	0.71	0.37	3.68	0.055	2.03
Farm size (hectares under cabbage)	0.18	0.21	0.73	0.393	1.2

Those farmers who used market information before selling their output were 4.39 times more likely to sell in formal markets compared to farmers who never did, while controlling for other variables ($p<0.001$). Also, group membership had a positive and statistically significant impact on formal sales (odds ratio=3.06, $p=0.003$). Education and ownership of land were not statistically significant at 0.05, although there was evidence of some relationship. Size of farms was insignificant.

Figure 4.2.8 Mode of transport used to access markets

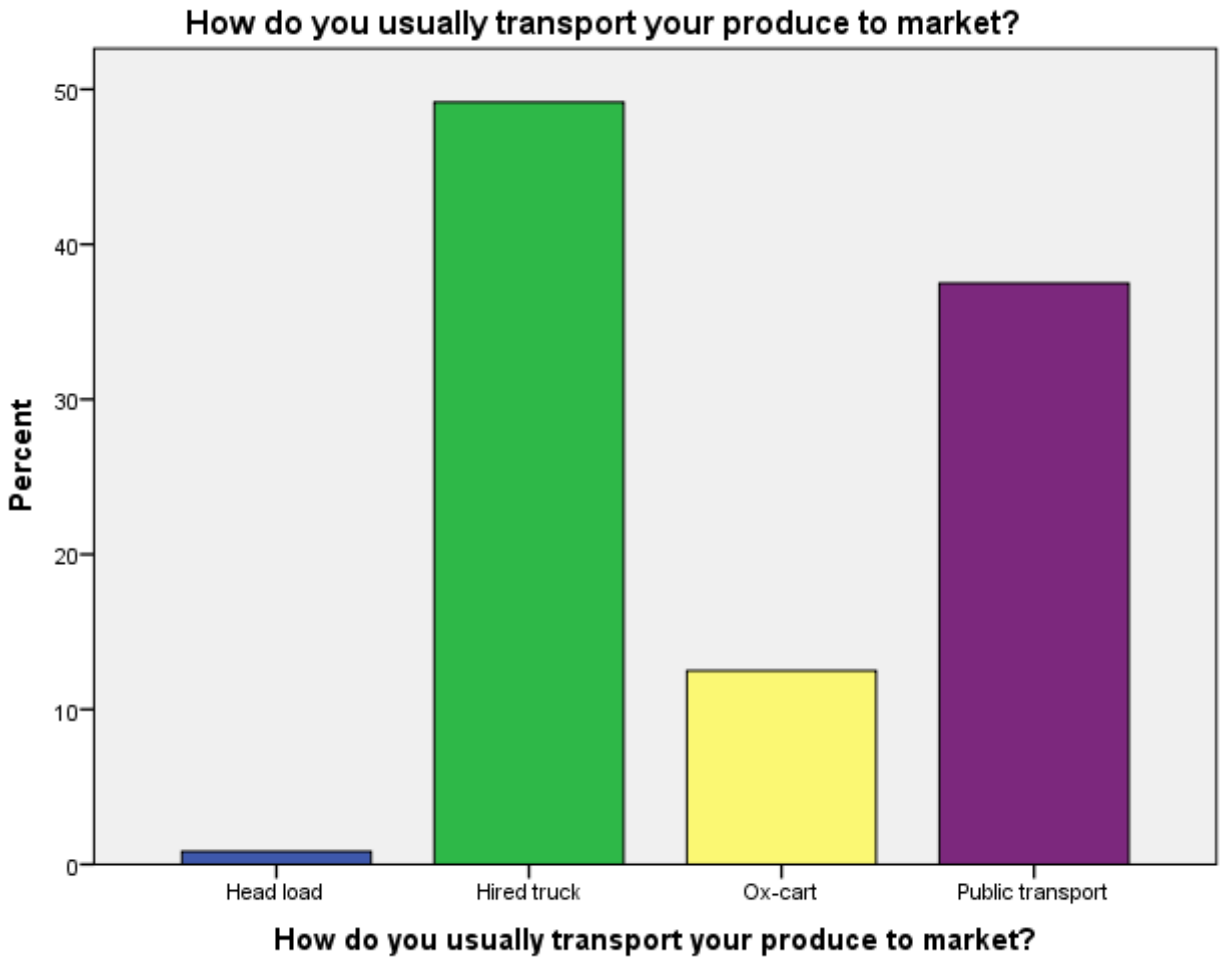


Figure 9. 4.2.8 Mode of transport used to access markets

The figure below shows the modes of transportation used by the respondents to take their cabbages to market. The most common mode of transport was hired trucks (49.2%); public transport was used in 37.5%, Ox-cart was used in 12.5% while head loading accounted for 0.83%. The dominance of hired trucks and public transport shows that most of the farmers use the paid means of transportation and hence affects their ability to transport cabbages to market as well as increases the cost of marketing. Hired trucks limit the farmers' flexibility since it is not possible to harvest and sell when truck is available thus farmers have to synchronize selling times and may not sell during peak prices. The percentage (12.5%) of Ox-carts is less than in other parts of rural areas of Zimbabwe because of the peri-urban nature of the study area. The small percentage of (0.83%) of those who use head loading faces limitations since it cannot move huge amounts of produce to formal markets. It also has some significant ramifications in

relation to the collection centre concept since centralizing the consolidation of produce makes it possible for more efficient transportation that is also less frequent and expensive, allowing for bulk transportation that is cheaper per unit while also ensuring that deliveries arrive at formal markets more reliably and on time.

Table 6. 4.2: Transport costs and post-harvest losses by mode

Transport mode	% of farmers	Average cost per trip (USD)	Average loss during transport (%)
Hired truck	49.17%	18.5	12.30%
Public transport	37.50%	8.2	18.70%
Ox-cart	12.50%	0 (own animal)	14.20%
Head load	0.83%	0 (but labour cost)	25.50%

Transport mode and profitability, post-harvest losses:

Trucks are expensive but experience low loss because of speed and protected loads. Profitability will depend on reaching critical volume to ensure that costs per trip is reduced. Public transport is cheap but leads to higher loss rate (18.7%) because of frequent handling, overcrowding, and delays, thereby affecting volume sold. The ox-cart is inexpensive but suffers from slow transit leading to exposure to heat and mechanical damage, leading to average loss rate of 14.2% but can reach distant urban centers. Head loading involves very few quantities of produce and high loss (25.5%) and time taken, thus not profitable.

There exists significant association between transport mode and high or low post harvest loss using a chi-square test of association ($\chi^2 = 9.34$, df = 3, p = 0.025). As for profitability, pooling of produce and transporting by hired trucks is the most effective means to reduce costs per kg and maintain quality.

4.3 MARKETING CHALLENGES FACED BY SMALLHOLDER CABBAGE FARMERS

This section relates to objective 1, which states that: Identify the challenges confronting small-scale cabbage farmers in Shamva.

Beyond mere percentage figures, respondents were required to give their perception of each of the identified challenges using a five-point Likert scale (where 1 indicates “not a challenge” and 5 “very severe challenge”). An index for the challenges was generated using the formula: [(Percentage of farmers identifying the challenge) x (Average severity/5)] × 100.

Table 7. 4.3: Ranking of marketing challenges

Challenge	Farmers reporting (%)	Mean severity score (1-5)	Challenge index (0-100)	Rank
Price volatility	82.5	4.7	77.6	1
Limited access to formal market channels	87.5	4.2	73.5	2
Post-harvest losses	100	3.8	76	3
Limited market information access	76.7	4.4	67.5	4
Access to finance	71.7	3.9	55.9	5

All farmers reported some level of post-harvest loss; the index is high due to prevalence, though severity score is slightly lower.

4.3.1 Price Volatility

Price fluctuation was identified as the greatest marketing problem among 82.5% of the respondents in the study. This price fluctuation is caused mainly by the uncoordinated production process where farmers produce their crops simultaneously due to market indications, leading to overproduction that causes the collapse of farm gate prices (Chikazhe et al., 2023).

These results correlate well with those obtained by Mhlanga et al., (2022), where the authors noted that price fluctuations are greatly affected by the uncoordinated production process among smallholder farmers in Zimbabwe.

Table 8. 4.3.1: Monthly farm-gate price per cabbage head (USD)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Price (USD)	0.4	0.25	0.18	0.15	0.22	0.3	0.45	0.5	0.55	0.5	0.38	0.32

Statistical summary of monthly prices

Statistic	Value (USD)
Mean	0.34
Minimum	0.15 (April)
Maximum	0.55 (September)
Standard deviation	0.13

The cost of one cabbage at farm gate was said to vary between US$ 0.15 at times of high supply (February-April) and US$ 0.55 at times of low supply (July-September), indicating that the price variations were more than 260%.

4.3.2 Limited Access to Formal Market Channels

A total of (87.5%) respondents marketed the produce through informal marketing channels, whereby roadside sales accounted for (42.5%) and marketing through informal market traders/buyers at farm gate accounted for (45%). A total of (12.5%) respondents indicated marketing their produce to formal markets, specifically, marketing produce to supermarkets and hotel buyers. The main problems cited that impeded the farmers from accessing formal market channels included; Inconsistent supply of volume ((61.7%)), failure to meet the required quality grades ((57.5%)), lack of established buying networks ((48.3%)) and poor road network to formal market areas ((39.2%)) and lack of proper documentation ((31.7%)).

Table 9. 4.3.2: Barriers to formal market access (ranked by frequency)

Rank	Barrier	Farmers reporting (%)
1	Inconsistent supply volume	61.7
2	Inability to meet quality grading requirements	57.5
3	Lack of established buyer relationships	48.3
4	Poor road access to formal market locations	39.2
5	Lack of documentation (invoices, receipts)	31.7
6	Payment delays or unreliable payment terms	24.2
7	Lack of food safety certification	18.3

Inconsistent supply volume (61.7%) is the topmost obstacle, as is expected from a fragmented process. Second most popular obstacle to selling through formal markets among smallholders is difficulty meeting grading standards (57.5%), meaning that while aggregation and supply volume are not an issue for smallholders, their inability to satisfy formal market quality standards continues to persist. This is similar to conclusions drawn from the review in Chapter 2, where volume, quality and reliability are presented as key barriers preventing smallholders from accessing modern markets. High level of sales going through informal channels proves that informal traders are responsible for capturing the majority of value addition between farmers and

urban consumers, depriving farmers of any additional profit. Low number of farmers selling through formal markets indicates that current markets are poorly exploited by farmers, and there are significant opportunities that can be explored using a marketing approach.

4.3.3 Post-Harvest Losses and Infrastructure Constraints

The respondents indicated that their average post-harvest losses were (31.6%) of the harvested volume of cabbages in the previous season. The field-level losses at harvest and at the farm gate before transportation comprised (18%) of the total losses and were mainly caused by mechanical damage when harvesting and heat stress when harvested products waited for sale. The transit losses (damage in transport and rejection by the purchaser at the market destinations) contributed another (13.6%) to the losses. This loss percentage is consistent with the 25-40% range observed in other studies of small-scale farmers growing vegetables in Zimbabwe (Nyamandi et al., 2022; FAO, 2021).

Methodology used to estimate the 31.6% loss, farmers were requested to estimate, in the last cabbage harvest conducted: (i) Total harvested volume (kilograms or number of standard heads) (ii) Sold volume (all market outlets) (iii) Lost volume (difference between harvested and sold). The post-harvest loss percentage per farmer was obtained as:

Loss % = Volume harvested - Volume sold/Volume harvested x 100

The average loss of 31.6%, therefore, is the mean of losses experienced by each individual farmer. These losses have been further classified into two levels: (i) Field losses: These are losses that occur in the process of harvesting (caused by mechanical injury in harvesting), delayed transport, which causes heat injury to the heads of cabbage, and culling of damaged heads. (ii) Transit losses: Rough handling, exposure to sunlight while stacked up, rejection of produce by buyers. It was required from the farmers to divide the total amount of loss into these two categories. Survey results indicated that field losses account for roughly 18% of harvested volumes, while transit losses are 13.6%.

Only 8.3% of farmers interviewed indicated having any form of cooling or refrigeration facility available. The vast majority (91.7%) used open-air systems in storing their produce (farm-level or roadside storage until picked up by the traders). This is a critical structural constraint, which

will be addressed in the marketing strategy through low-cost patriot technologies such as evaporative coolers (Kitinoja and AlHassan, 2012).

4.3.4 Access to Finance

The lack of agricultural finance was seen as one of the most important constraints among the participants (71.7%). Lack of credit greatly hinders a farmer's capacity to purchase good quality inputs, equipment, and other services in the harvesting and marketing stages. Most of the respondents (78.3%) financed themselves through savings and income from previous crops while only (10.8%) used agricultural financing. This calls for the introduction of easy financing mechanisms such as group loans which consider the real situation of small farmers (FAO, 2022).

Table 10. 4.3.4: Sources of agricultural finance among smallholder cabbage farmers

Source	% of farmers using this source	Typical loan size (USD)	Typical interest rate (% per season)
Informal savings groups (Village Savings & Loans)	6.70%	20-50	0% (service fee only)
Microfinance institutions	2.50%	50-200	15-25%
Commercial banks	1.60%	500-2000	20-30%
NGOs / development programmes	0.80%	30-100	0-5%
Any formal credit (total)	10.80%		

The extremely low adoption of credit services (10.8%) is influenced by both the side of supply and demand constraints. The supply-side constraints include high collateral needs, complicated application processes, and insufficient bank branches in rural areas. The demand-side constraints include poor financial literacy and risks associated with debt and uncertainty of income from agriculture. The rates charged on borrowing (15-30% per season, equivalent to 45-90% annually) are extremely prohibitive, especially considering that crop prices are volatile and losses occur after harvesting. Without access to credit, farmers cannot afford: (i) Improved inputs including seeds, fertilizers, and pesticides, which will improve their output and quality. (ii) Equipment such as shade nets and other equipment used in post-harvest activities such as storing.

4.4 MARKET LINKAGE MECHANISM

4.4.1 Current Value Chain Structure

Specific Objective 1 is the topic of this section, which aims to evaluate the current and potential market linkage mechanisms that can help in improving volume consistency and bargaining strength of smallholder cabbage farmers in Shamva. The results of value chain analysis have shown that there is a very fragmented marketing arrangement with many levels of middlemen involved between the smallholder farmer and the end consumer. Some of the major players in the value chain include the following: smallholder farmers (dispersed and individual farmers); informal middlemen who buy at the farm level and deliver the produce to the urban markets; informal market vendors who sell produce in the urban markets to the consumers; formal market chains (consisting of supermarkets and hotel buyers and representing a small portion of inaccessible market chains); and the consumers.

The farm gate price analysis indicated that there were substantial price margins enjoyed by the intermediaries at the detriment of farmers. The average farm gate price earned by farmers was USD 0.26 per head as against a wholesale price of USD 0.35 per head in Harare Mbare Musika market representing an average farm gate price discount of 25.7%. During the time of the study, the average retail price in Harare supermarkets was USD 0.85 per head. In light of these figures, farmers only got to enjoy 30.6% of the consumer price on average (0.26/0.85 x 100%). About 10.6% of the consumer price margin was made in the farm gate-to-wholesale price transfer (USD 0.09) by informal traders and middlemen while the remaining 58.8% was made in the wholesale-to-retail price transfer (USD 0.50) by retailers. As per Chikazhe et al. (2023); Mhlanga et al. (2023), such margin structure where the primary producers get less than one third of the consumer price has been seen before in similar value chains in Zimbabwe.

4.4.2 Collective Action and Group Dynamics

In terms of performance on all indicators evaluated, the (30.8%) of the farmers that indicated their involvement in farmer groups performed better compared to non-group members. Members in farmer groups had a farm gate price that was (19.3%) higher compared to non-group members at an average of USD 0.31 and USD 0.26 per head respectively which aligns with findings by Chikazhe et al. (2023) regarding Marondera district. Farmers in groups indicated a lower post-harvest loss rate of (26.4%) compared to non-group members at (33.7%). Also, farmers in groups were able to sell livestock through formal markets (22.9%) compared to (6.0%) for non-group

members and had more knowledge of market prices (40.5%) than non-group members at (13.3%).

Statistically, there existed a significant association between being involved in farmer groups and having a higher farm gate price at a chi-square value of $x^2=14.7$; df=3; $p<0.01$ as well as selling through formal markets $x^2=18.3$; df=1; $p<0.001$. This shows that there is substantial statistical evidence that the involvement in farmer groups significantly enhances marketing performance which is an important justification for recommending a formalization of collective marketing approach within the proposed marketing strategy.

Table 11. 4.4.2: Contingency table Group Membership x Access to Formal Market Channels.

	Sold to Formal Buyer	Did Not Sell to Formal Buyer	Row Total
Group member	8 (22.9%)	27 (77.1%)	**35**
Non-member	5 (6.0%)	80 (94.0%)	**85**
Column Total	**13**	**107**	**120**

Birchall (2004) and Bernard et al. (2010) explain that according to surveys, it can be seen that there is general apprehension regarding issues pertaining to governance and fair distribution of benefits among non-members, which emphasizes the need for a robust system of governance and transparency in any new collective marketing venture.

4.4.3 Linkages with Formal Buyers

Data from survey results reveal that only 12.5% of the respondents recorded sales in the supermarket or institutional buyers market in the past season even though 87.5% were willing to reach formal markets. This proves that demand does indeed exist in formal markets but the limiting factor in reaching these markets is structural in nature and not related to lack of opportunities. In order to avoid repetition of what was already established under Section 4.3.2, this section highlights the linkage opportunities that organised groups of farmers can take advantage of. According to ZimTrade (2023), hotels and supermarkets in Harare currently obtain

their supply of fresh vegetables from informal sources due to their inability to obtain reliable supplies locally. It is therefore clear that there is an opportunity for farmer organisations who can provide reliable volumes, grading and supply schedules to tap into these markets. An additional untapped market that could be accessed by these farmers via the formal institutions of Zimbabwe include schools, hospitals and government caterers among other institutions as highlighted in Ministry of Public Service (2022).

4.5 ASSESSMENT POST-HARVEST HANDLING AND STORAGE INTERVENTIONS

4.5.1 Current Post-Harvest Practices

The survey results show that the current state of post-harvest activities carried out in the study area is extremely primitive with virtually no investments in technology or equipment. Harvesting is carried out manually with products put on the head on the floor or in open sacks for transportation. The majority of farmers (82.5%) do not engage in field packing and sorting, selling their produce as a mix of grades, which is sorted and graded later by merchants.

Survey data indicate that at collection points at the farm gate, temperatures frequently exceed safe storage limits with the almost complete lack of shade houses or cooling solutions being a major issue that can be easily addressed with little financial costs.

As a complement to self-reported data, the researcher carried out observations at five farm gates and two collection points at harvest and load times. Observational data were obtained and will be presented as follows:

Plate 4.5.1: Freshly cut heads of cabbage laid directly on the ground with no shade or support structures.

Plate 4.5.1: Bags of cabbage placed in an uncovered vehicle with no padding or coverings.

Plate 4.5.1: An example of a farmer sorting cabbage through visual grading alone with no ring sizing or standardized crates.

Plate 4.5.1: Wilted and discoloured heads of cabbage at a roadside collection centre exposed to sunlight for many hours.

The above pictures validate the survey results and visually justify the importance of low-cost solutions like shade, packing tables, and transport coverings.

4.5.2 Proposed Low-Cost Interventions

Based on the field assessment and literature review, three priority post-harvest interventions are recommended for the study area, as they driven from the findings:

(i) Zero-Energy Cool Chambers (ZECC) at farmer collection point of aggregation.
(ii) Improved harvesting and field packing protocols
(iii) Grading and standardisation at the point of aggregation.

Zero Energy Cool Chambers (ZECC), ZECC is a double-walled brick chamber filled with wet sand, maintaining lower internal temperatures of 10-15 degrees Celsius lower than ambient temperatures, achieved by evaporative cooling process. Based on construction costs from similar projects in Zimbabwe, a ZECC that will store approximately 500 kg of cabbage is likely to cost between USD 45 and 60 made from readily available local material. Considering the loss reduction capability of between 30-50% (Kitinoja and AlHassan, 2012) and survey results of an average loss level of 31.6%, introduction of ZECC facilities in collection centers would reduce losses to the level of about 15-20%.

Harvesting and handling protocol improvements, a simple training on appropriate harvest time (harvesting during early morning hours while temperatures are low), appropriate handling methods (reducing head dropping or excess stacking) and loading onto trucks (lining the bed of the trucks with foam or canvas) can help in reducing losses due to mechanical damage with little or no cost involved. Survey responses show that only 17.5% of respondents harvest in the fields, indicating that post-harvest handling training is very important for the study site.

With grading and standardization involving the separation of cabbages by size (small, medium, and large) before their aggregation, farmers will be able to earn more from premium pricing from supermarkets and hotels that offer different prices based on graded products. The expense required for building simple grading facilities (grader tables and standard sizing rings) has been estimated at USD 20-30 per collection center and is quite cost-effective.

4.6 SWOT Analysis of Smallholder Cabbage Marketing

SWOT Analysis was done using the results obtained from the quantitive survey for an overall strategic evaluation of the smallholder cabbage marketing arrangement in the study region.

Strengths: Skilled farming community with production experience, high availability of irrigation facilities allowing all-year-round production, close proximity to Harare markets (90 km away), existing infrastructure of the Agricultural Extension department, high level of mobile phones ownership (87.5%), and willingness to form groups (30.8% already in groups).

Weaknesses: Individual marketing arrangements with poor negotiating capacity, high post-harvest losses (average of 31.6%), lack of adequate cold chain and storage facilities, lack of knowledge of information regarding markets, limited access to formal sources of finance.

Opportunities: Increased demand in urban areas for cheaper vegetables in Harare, unfulfilled demands of supermarkets from farmers, cheap post-harvest processing techniques (ZECC), government policies for agriculture (Zimbabwe Vision 2030) favoring horticulture, involvement of NGOs and development partners in horticulture, market information through technology platforms (ZimTrade) and institutional purchases (schools and hospitals).

Threats: Unstable macroeconomic environment (inflation and currency fluctuations), risk posed by climate change (irregular rainfall), stiff competition by commercial farmers, side selling as a threat to group efforts, poor road network, insufficient availability of inputs (seeds and agrichemicals).

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The objectives of this study include development of a holistic marketing strategy for small holder cabbage farmers in Shamva District, Zimbabwe and specifically the following; determine the marketing challenges facing small holder cabbage farmers in Shamva District, determine the market linkage mechanism in a bid to increase volumes, consistency and bargaining power for the farmers in Shamva and propose low cost post harvest handling and storage measures aimed at reducing losses for small holder cabbage farmers. The research findings will add to the existing literature and provide empirical evidence that can be used for formulating a marketing strategy.

Regarding the first objective of the study, the research finds that there are indeed a number of marketing problems facing smallholder farmers of cabbage in Shamva. Some of the major ones are; high prices, lack of proper market information, post-harvest loss, lack of financing, lack of access to markets and poor infrastructure. The problem appears to be systemic rather than being individual in nature. This is due to the fact that the current marketing structures are disjointed and uncoordinated. There are however farmers engaged in organized marketing groups whose marketing performance is higher.

In addition to the second objective, the study finds that marketing cooperatives together with ownership of collection centers by farmers form the most viable mechanism for establishing market linkages in the study region. From the findings, it is evident that organized smallholder producers have access to profitable market channels such as supermarkets and institutional buyers when they meet the required volumes and qualities. In line with existing practices in Africa's horticultural sector, including successful cases in Zimbabwe, it is possible to establish market linkages through collection centers among smallholder farmers.

Finally in relation to the third objective, the study identifies zero-energy cool chambers (ZECCs) and improved harvesting, handling and grading protocols as the most cost-effective post-harvest strategies in the study region. ZECCs provide an affordable solution for smallholder producers,

with fast pay-back periods and are easily implementable within the proposed collection center system.

This four pillar marketing strategy including the integration of collective marketing, reduction of post-harvest losses, creation of market linkages, and market information can be said to be an effective response to the identified marketing systems failures. The adoption of this strategy, which is being implemented through the support of AGRITEX, NGO's and the national agriculture policy framework of Zimbabwe, holds great potential for improving farm gate prices, reducing post-harvest losses, increasing access to markets and enhancing the incomes of the smallholder cabbage farmers.

5.2 RECOMMENDATIONS

5.2.1 Recommendation for Farmers and Farmer Groups

It is advisable for small scale cabbage growers in Shamva District to form organised marketing cooperatives consisting of groups ranging between 30 and 50 people who will be governed by management committees of which women should comprise at least 40%. The groups should fund themselves for the construction of ZECCs in collection areas through matched funding from NGOs and development partners. All cooperative members should be involved in AGRITEX training in post-harvest handling and pricing. Each group should appoint an officer to be involved in gathering market prices from Harare markets every week.

5.2.2 Recommendation for Extension Services (AGRITEX)

It is suggested that AGRITEX focus on promoting the formation of farmer cooperatives in the research area, giving training in governance and business planning, alongside assisting with linkages as key aspects of extension services provided. The extension workers are advised to include post-harvest handling skills training in their current horticultural extension training programs and ensure that all small-scale horticultural farmers in the research area get post-harvest handling skills training within the next two seasons. It is further suggested that AGRITEX promote the services offered by ZimTrade and help set up WhatsApp based price information platforms in wards.

5.2.3 Recommendations for Government and Policy Makers

Investment in the upgrading of rural roads and cold chain systems by the Ministry of Lands, Agriculture, Water and Rural Resettlement in Shamva districts is suggested taking into consideration the role played by poor infrastructure development in impeding market accessibility among small-scale farmers. There should be policy provisions enabling access of smallholder farmers to short-term agricultural credit through such agencies as the AFC and other financial institutions and in particular through group-lending programs with storage facilities and equipment used as collaterals.

There needs to be an extension of the Institutional Procurement Program with its better communication to farmers in the region which would serve as a formal mechanism allowing organized farmers to get into business with schools, hospitals and other state enterprises. This directly reflects the policy goals envisaged under Vision 2023 of the country regarding the provision of equal market access for smallholder farmers and their improved incomes. The National Agriculture Policy Framework should include a marketing sub-strategy targeting smallholder farmers in horticultural marketing.

5.2.4 Recommendations for NGOs and Development Partners

NGOs and other development organizations operating within Zimbabwe's agricultural sector are advised to focus on providing assistance towards building the capacities of farming cooperatives within the study areas, which will involve providing training as well as financial resources required for setting up the ZECCs and grading machines. The market facilitation services, which will also require initial investments in terms of costs of making linkages with buyers such as supermarkets and institutional buyers, should be offered as catalytic interventions that the farming cooperatives will sustain within three to four seasons.

5.3 Areas for Further Research

The current study highlights some important fields of research that could be helpful in promoting knowledge and practice in smallholder horticulture marketing in Zimbabwe. Firstly, a study examining the marketing performance of cooperatives created using the proposed marketing strategy over a number of years is needed to provide proof regarding the impact of marketing practices. Secondly, a gender analysis of cost-benefit distribution among the farmers in the farmers' cooperative could ensure equity between men and women farmers. Thirdly, a value chain analysis of all the types of horticultural produce (tomatoes, leaf vegetable and onions) in

the studied area could pave way for extending the marketing strategy beyond cabbage to promote diversified incomes. Finally, a study assessing the climate resilience consequences of the proposed marketing strategy could assist in incorporating climate change adaptation strategies in agriculture and marketing policies in Zimbabwe.

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APPENDICES

APPENDIX A: FARMER SURVEY QUESTIONNAIRE

SMALLHOLDER CABBAGE FARMER MARKETING SURVEY

Bindura University of Science Education

Department of Agricultural Economics, Education and Extension

INTRODUCTION

Good day, I am Donald Nzorozwa, a student of Bindura University of Science Education. The purpose of my research is to investigate marketing techniques among smallholder cabbage farmers in this region. Participation in this study is entirely voluntary and all information obtained will remain strictly confidential. This questionnaire should take you about half an hour to fill in.

SECTION A: FARMER AND HOUSEHOLD PROFILE

A1. Ward: _____

A2. Village: _____

A3. Gender: Male [ ] Female [ ]

A4. Age: ____ years

A5. Highest level of education completed:

[ ] No formal education [ ] Primary (Grade 1–7) [ ] Secondary (Form 1–6) [ ] Tertiary

A6. Household size (number of people): _____

A7. How many years have you been farming cabbage? _____ years

SECTION B: FARM AND PRODUCTION PROFILE

B1. Total land area (hectares): _____

B2. Area under cabbage in current/last season (hectares): _____

B3. Source of irrigation: [ ] Borehole [ ] River [ ] Dam [ ] Rainwater only [ ] Other: _____

B4. Estimated total cabbage production last season (number of heads): _____

B5. Estimated total cabbage production last season (kg): _____

SECTION C: MARKETING PRACTICES

C1. Who do you primarily sell your cabbage to? (tick all that apply)

[ ] Informal traders/middlemen at farm gate

[ ] Directly at informal roadside market

[ ] Harare wholesale market (Mbare Musika)

[ ] Supermarkets

[ ] Hotels/restaurants

[ ] Schools/hospitals/government institutions

[ ] Other: _____

C2. What is the average price you receive per cabbage head? (last season) USD _____

C3. Do you belong to any farmer group, cooperative or marketing association?

[ ] Yes (Name of group: _____) [ ] No

C4. If yes, does your group market cabbage collectively? [ ] Yes [ ] No

C5. Where do you obtain market price information before selling?

[ ] I do not check prices before selling

[ ] Word of mouth from other farmers

[ ] Trader/middleman tells me

[ ] Mobile phone (app/SMS/WhatsApp)

[ ] Radio

[ ] ZimTrade or extension officer

[ ] Other: _____

SECTION D: POST-HARVEST LOSSES

D1. Of every 100 heads of cabbage you harvest, how many are lost/rejected before you receive payment? (estimate): _____

D2. Where do losses mainly occur? (tick all that apply)

[ ] At harvest/in the field

[ ] At the farm gate while waiting for buyers

[ ] During transport

[ ] Rejected by buyer at destination market

D3. What causes most of your losses? (rank top 3: 1= most important)

___ Heat/sun exposure ___ Mechanical damage ___ Delayed sale ___ Pests/disease ___ Other

D4. Do you have any storage facility for your cabbage? [ ] Yes [ ] No

D5. If yes, describe: _____

SECTION E: MARKETING CHALLENGES

E1. Please rate the following marketing challenges on a scale of 1–5 (1 = Not a challenge; 5 = Very severe challenge):

Price volatility: [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

Limited access to formal buyers: [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

High post-harvest losses: [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

Limited market information: [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

Poor road infrastructure: [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

Limited access to finance: [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

Quality/grading requirements: [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

E2. What single change would most improve your income from cabbage? _____

Thank you very much for your time and cooperation.